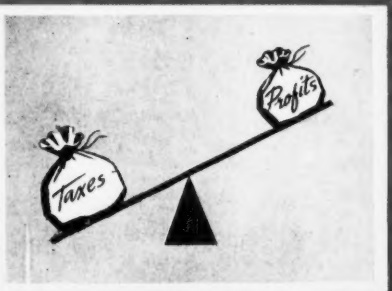
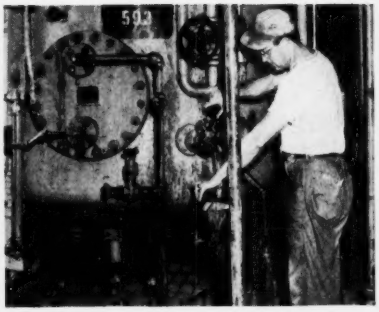
Chemical Week

November 10, 1951 Price 35 cents





Higher sales but lower profits: that's the third-quarter theme as taxes outweigh net gains .... p. 11

Wool may win a round in its battle with synthetics; propiolactone treatment is the key ..... p. 23

CW Camera: On the spot as hefty ethanolamine expansion gets under way ..... p. 31

New sulfur dioxide plant will yield a 70% gas; secret: oxygen instead of air ..... p. 32

"White Christmas" assured as specialty makers push aerosol "snow" sprays ..... p. 35

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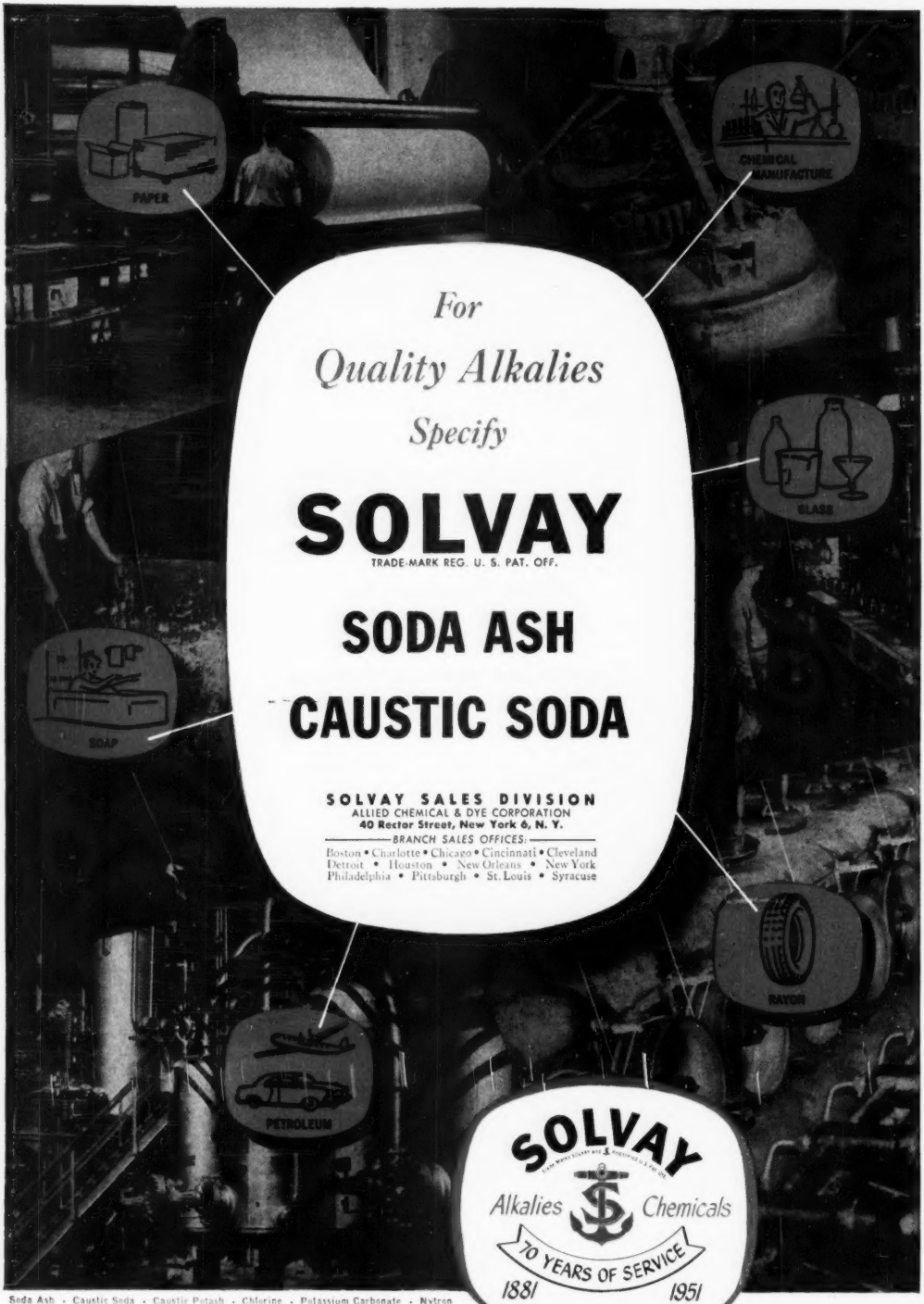

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Chemical Week

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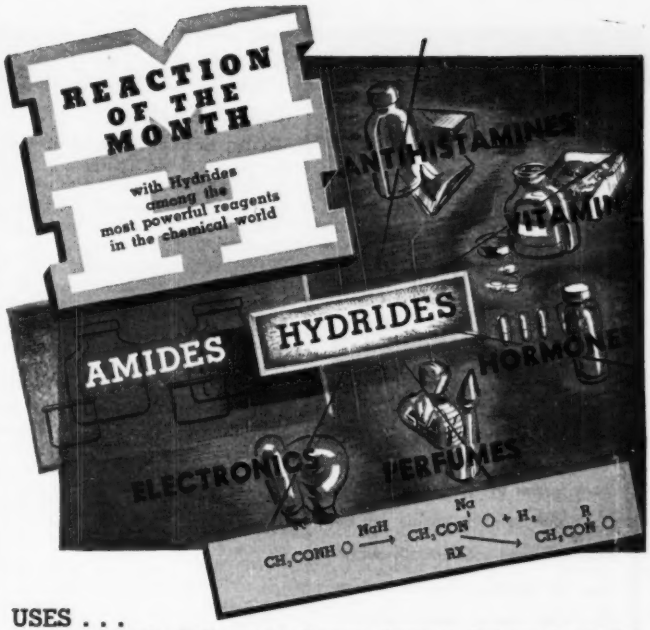

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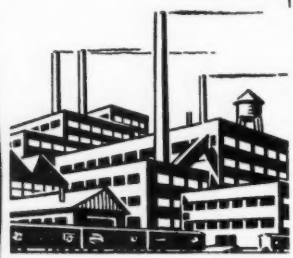

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OPINION . . . . .

Patent Advice

To THE EDITOR: Please do not accept the advice of Mr. Thornton F. Holder of the Diamond Alkali Co. who asks . . . in your Opinion Department, Oct. 20 . . . that you delete news of chemical patent decisions.

I agree wholeheartedly with Mr. Holder that it would be foolhardy for anyone to accept your news reports as legal advice, but I think it would be wrong to withhold such information.

Those of us who do not regularly read legal journals are entitled to a briefing on important chemical patent decisions. If they vitally concern our business, I think both you and Mr. Holder can rest assured that we will take no actions without consulting our own patent attorneys for expert advice . . .

A. A. RONSTON,
New York, N. Y.

Market Thrift

To THE EDITOR: . . . The article "Military Target" Fungi (Oct. 20) states in part . . . "These two fungicides are being substituted for copper 8-quinolinolate, which is in short supply."

As a . . . producer of 8-hydroxyquinoline base . . . this statement to our knowledge is in error. Supplies of 8-quinolinolate are at present more than ample to handle all government requirements . . . production facilities are such to more than take care of any foreseeable future requirements.

JOHN F. ROBSON
Vice-president
Gamma Chemical Corp.
New York, N. Y.

Right, Reader Robson. CW was caught by a rapid market shift; tight as could be a matter of weeks ago, the fungicide is now right plentiful.—ED.

Plants Grow, Bites Go

To THE EDITOR: . . . In your recent story on Agava (a West Indian vegetable extract, by-product of rope manufacture, Oct. 27) you mentioned that I said that one of the ingredients in Agava is cortisone and, in fact, that it has been considered as a source of that material. Too, that its action, so it seems, is like cortisone's—"only more so."

That isn't precisely correct. Agava contains necogenin which is the starting point for cortisone.

Moreover, Agava does not kill poison ivy plants . . . it causes the plant to grow. Rather it kills the effects of poison ivy on human beings in 24 hours or less.

The November issue of the Reader's Digest, under the heading "Power and Glory of ACTH," confirms several of the discoveries that have been made regarding Agava . . . particularly where they state that it will alleviate the dangers of copperhead snake bites, black widow spider bites and poison ivy.

In this connection the writer has been stung by hornets and bees many times . . . and many times by other insects . . . and an immediate application of Agava has removed the pain or itch and eliminated any swelling which might have occurred.

Agava, or any derivative of Agava, will be presented to the public for application . . . such as medical . . . only after full approval by the F. D. A. We don't make any medical claims whatsoever . . . only that people have used it on their own initiative and reported it to us.

CLAUDE L. SPRAY,
President,
Agava Products, Inc.,
Jersey City, N. J.

Thanks, Reader Spray. In case any readers overlooked it, CW carefully said: "Present Agava label specifies no medical uses . . . it is being sold as a detergent and water treatment material . . . has the advantage of noncausticity. Undoubtedly, before such (medical) labeling is approved, the FDA will take a long and careful look at the various claims."—ED.

Wheat and Thorium

To THE EDITOR: . . . A reader took you to task in your Oct. 27th Opinion Department for using the phrase "bargaining tool" in talking about wheat for India. He did . . . in fact . . . call you callous for suggesting that we could have "bargained" for thorium from Indian . . . suggested this might have meant that millions of Indians might have starved.

It is my understanding that even starving Indians cannot eat any food handled by people of higher caste . . . according to their religion. Actually, the wheat was to be re-sold on the world market.

I don't think you were quite so callous after all.

NAME WITHHELD

Although CW appreciates that buttressing thought, and although it's a rumor that has been widely circulated,

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SYNONYMS: ethylenediamine tetraacetic acid; ethylene bisimino diacetic acid; ethylene dinitrilotetraacetic acid.

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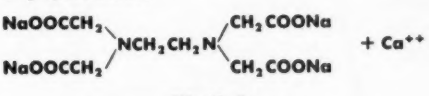
SEQUESTRENE A is a colorless liquid; the other SEQUESTRENES are non-hygroscopic white powders.

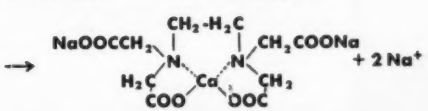
SPECIFICATIONS

	SEQUESTRENE				
	NA2	NA3	NA4	AA	A
Molecular weight	372	376	416	292	
SEQUESTRENE AA content	78.5	77.6	70.2	99	20
g. Ca^{++} sequestered/100g.	10.5	10.5	9.6	13.5	2.6
pH aqueous solution	5.0	8.4	10.3	2.3	12.5
Solubility (26° C)-gms./100cc. water	11.1	57	103	0.03	—

SEQUESTRENE is a non-colloidal organic chelating or complexing agent which resembles the polyphosphates in its ability to deionize heavy metal and alkali earth ions. SEQUESTRENE does not, however, hydrolyze in aqueous solution; it is stable and effective over a wide range of temperature and pH; it is compatible with cationic materials and soluble in many semi-aqueous and non-aqueous media. SEQUESTRENE is one of the most powerful deionizing agents known.

SEQUESTRENE may be thought of as a water soluble ion exchanger. It reacts with calcium ion, for example, as follows:





The water soluble calcium complex of SEQUESTRENE is so stable that oxalate will cause no precipitation in neutral or alkaline solution. SEQUESTRENE will dissolve metallic soaps. Its affinity for iron is such that it will prevent precipitation of iron hydroxide in the presence of sodium carbonate.

APPLICATIONS

SOAPS AND DETERGENTS . . . as a clarifying agent and water softener for liquid potash soaps, tall oil soaps, liquid alkaline detergents to prevent clouding in glass containers or on dilution . . . to improve foaming and detergent action of high titre soaps, C16-C18 alcohol sulfates, etc., at low temperature and in hard water . . . . in formulation of hard water toilet soap . . . . to prevent rancidity and oxidation of sulfonated oils and soap, particularly for rug and upholstery shampoo use . . . in soaps and emulsifiers to counteract trace metal effects on polymerization rates and yields . . . . to prevent precipitation of calcium and metal carbonates and silicates in alkali detergent solutions . . . . in formulation of milk stone solvents, alkali paint strippers, heavy duty metal cleaners and polishes, laundry alkalis, rust removers.

DISINFECTANTS AND SANITARY CHEMICALS . . . . in formulation of quaternary ammonium germicide solutions and detergent-sanitizers for hard water use . . . . in caustic soda bottle washing compounds . . . . in phenolic disinfectants of increased efficiency in soft water and better dispersibility in hard water.

TOILET GOODS . . . . as a clarifier, foam builder and water softener in liquid soap shampoos . . . . clarifier for cuticle remover, sulfites, thioglycollates and other alkaline solutions . . . . neutral type hair rinses . . . . as an antioxidant for solubilized oils . . . in dentifrices to dissolve tartar deposits.

METAL PROCESSING . . . . removal of soap films from metals . . . . anodizing aluminum . . . . bright plating of copper, zinc, nickel, cadmium, cobalt, brass . . . . stabilizing metasilicate solutions . . . . formulation of polishing, buffing, cleaning compounds.

TEXTILE PROCESSING . . . . to prevent streaking, spotting, dulling, crocking, poor color yields and shade change in dyeing . . . . in kier boiling and continuous scouring . . . . in starch finishes to prevent dulling . . . . in printing pastes to prevent livering . . . . in bleaching to stabilize peroxide . . . . in viscose spinning baths . . . . stripping chromed and coppered dyeings . . . .

PHARMACEUTICALS, BIOLOGICALS . . . . antioxidant for ascorbic acid, mercaptans, aromatic amines . . . . clarification of plant and animal extracts . . . . eliminating incompatibilities due to formation of insoluble alkali earth or heavy metal precipitates, discoloration due to trace metal . . . . preparation of bismuth and other heavy metal complexes for therapeutic use . . . . as a blood anticoagulant . . . . in blood protein fractionation . . . . treatment of renal lithiasis.

FOODS AND BEVERAGES . . . . clarifier for wine, vinegar . . . . antioxidant and rancidity retardant . . . . extraction of pectin . . . . preventing discoloration and retarding deterioration of foods containing heavy metals . . . . enzyme deactivator.

RUBBER . . . . as a stabilizer for natural raw latex, to retard oxidation, excessive tackiness . . . . in cold rubber polymerization as activator and iron scavenger . . . .

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OPINION . . . . . .

it just isn't true. These are the facts: Congress approved a loan in June with which India could buy two million bushels of our wheat; about half that quantity has been shipped.

The caste system is not involved in wheat-eating. About a quarter of India's inhabitants eat rice, three-quarters eat wheat. Who eats what is determined only by which grain is grown in any region. Transportation is poor, people eat the grown-at-hand grain. Hence we fear that if the accusation that we were callous was originally justified, it still is.—ED.

It Stinks Good

TO THE EDITOR: . . . Quite possibly you may not have seen the attached clipping . . . and you might be interested to know that your piece on the Natural Gas Odorizing Co. (Aug. 11) found its way into the conservative Insurance Law Journal . . .

E. R. LIONEL,
Tacoma, Wash.

The clipping: Under the fetching caption "It Stinks Good", the Law Journal sketches the corporate growth of the subject manufacturer of gas odorants (from nothing to a million dollars a year in the past eight years) and says in droll vein: A stinky business is a good business . . . a good business proposition may smell bad.—ED.

Isotope Safety

TO THE EDITOR: . . . I have read several articles on radio-active isotopes in your magazine . . . with great interest . . . am calling them to the attention of some of our executives for their information.

We value . . . articles dealing with this subject . . . to be kept fully informed of anything new which is developed.

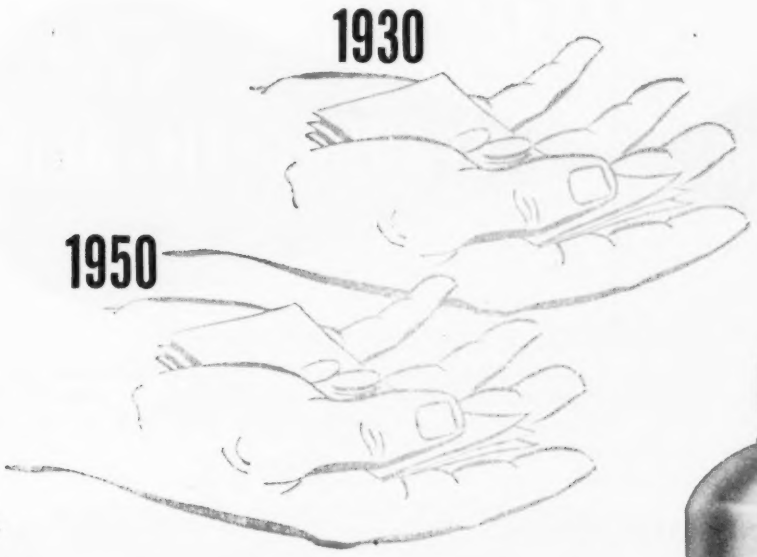
HERMAN N. BUNDESEN
President
Board of Health
Chicago, Ill.

To far-sighted Reader Bundesen (who has launched one of the country's first municipal programs to protect citizens against atomic wastes), CW's thanks. —ED.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 18, N. Y.

HACKNEY LIGHTWEIGHT CYLINDERS



it costs NO more to ship

150 lbs. of anhydrous ammonia today than in 1930...even though freight rates are up 41%!

Hackney Lightweight Cylinders offset higher freight rates for many products. These facts about anhydrous ammonia shipments illustrate possible savings to all compressed gas manufacturers.

In 1930, it cost a shipper $4.64 to send 150 lbs. of anhydrous ammonia from St. Louis to Dallas. Freight rates for carload shipments were low ($1.16 per 100 lbs.), the cylinder was heavy (250 lbs.).

In 1950, it cost a shipper $4.65 to send 150 lbs. of anhydrous ammonia from St. Louis to Dallas. Freight rates are higher ($1.63 per 100 lbs.), *but the cylinder is lighter* (135 lbs.).

Not only that . . . it costs about 25% *less* to return the empty cylinder *today*, a definite economy.

Hackney Lightweight Cylinders, fabricated from high strength steels, give you cost-saving light weight, with no sacrifice in strength. The Hackney Deep Drawing Process assures uniform sidewall thickness and eliminates all excess weight. Change to the lighter, easier-to-handle Hackney Cylinder now! Write us for further information.

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assay ● 98.0% min. (by acidity and hydrolysis) Kay-Fries CYANOACETIC ACID is exceptionally uniform in purity with water accounting for substantially all of the remaining 2.0%.

color ● 75 Hazen scale (10 g. of acid in 50cc dist. H_2O).

ash ● .075% maximum.

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$CNCH_2COOH + ROH \longrightarrow CNCH_2COOR + H_2O$

AMIDATION
$CNCH_2COOH + HNRR^1 \longrightarrow CNCH_2CONRR^1 + H_2O$

CHLORINATION
$CNCH_2COOH + PCl_3 + Cl_2 \longrightarrow CNCH_2COCl + POCl_3 + HCl$

HYDROLYSIS
$CNCH_2COOH + H_2O \longrightarrow CH_2(COOH)_2 + NH_3$

REDUCTION
$CNCH_2COOH + 2H_2 \longrightarrow NH_2CH_2CH_2COOH$

CONDENSATION
$CNCH_2COOH + RCOR^1 \longrightarrow RR^1C{=}C(CN)COOH + H_2O$

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NEWSLETTER

It's still far too early to talk about "cures" for cancer or poliomyelitis, but big news this week is the substantial progress made on both of these devasting diseases by Lederle Laboratories:

Aureomycin has shown activity against pre-cancerous lesions, points the path to possible pre-cancer prophylaxis.

A new vaccine protects monkeys against some strains of polio virus; but it's still in the research stage, must be tested on humans. There's a big chance of a "flop," too: Many scores of strains cause polio, a practical vaccine must work against all of them.

Less dramatic but presently more substantial are other company developments:

Plaskon Division has a new alkyd molding compound containing glass fiber—ready to mold. The finished items have high impact resistance, are easier to fabricate than by the laminate method.

More phenol from cumene: Standard Oil of California will build a $4 million, 37 million pounds-per-year plant at Richmond, Calif. Oronite Chemical Co. will market the product.

Ethyl Corp. is testing a mixture of primary amyl nitrates as a cetane improver for diesel fuels. Also, Ethyl is now making metallic calcium in pilot-plant quantities—presumably as a by-product of its Downs-type sodium cells.

Add another primaquine producer: Winthrop-Stearns will start making the new antimalarial (CW, November 3). Along with Eli Lilly, it has supplied trial lots to clinical researchers.

Pennsalt and Sharples Chemicals have been drawing closer together in their chemical interests; and thus merger of the two next month comes as a logical consummation of their separate but integrated aims.

The two companies' Wyandotte, Mich., plants are adjacent; indeed, Sharples moved there from Belle, W. Va., in 1932 in order to use raw materials obtained from Pennsalt.

Chiefly in the inorganic field, Pennsalt has trended toward organics, now makes insecticides. Sharples, on the other hand, bases its product lines (rubber and pharmaceutical chemicals, gas odorants, solvents) largely on chlorine, caustic soda and ammonia.

On the more somber side of corporate news, reports from Houston put Glenn McCarthy's current indebtedness at $55 million.

Equitable Life is his chief creditor, and it regards McCarthy Chemical Co. as the real start of his troubles: "There are always bugs in . . . processes such as Glenn was trying to perfect. . . . Bugs cost money."

Incidentally, a scrambled teletype had us saying that Hancock Oil was licensing its glycol process to a Belgian firm (CW Newsletter, October 27). It's the other way around—and Hancock's plant will be outdoors as contrasted with the licensor's indoors operation.

Defense Production Administration kept right on working during its 60-day moratorium on accelerated tax amortization for defense facilities, approved 142 certificates of necessity. These fell into "urgent case" categories qualifying as exceptions.

Chemicals on which expansions were approved included chlorine, phosphorus, perchlorethylene, butylene alkylate, ethylene oxide, alkylate, sodium phosphonates, sulfur, sulfuric acid, diisopropyl alkylate, ethyl compounds, acetone cyanohydrin, methyl methacrylate, and molybdenum oxide.

But DPA turned down 796 applications for certification in the breather period set aside to review the whole certification program.

And stricter regulations will obtain in the future. They include:

- No issuance of certificates on construction begun after Nov. 1 unless DPA has, prior to beginning of construction, determined that there is a shortage of facilities and the product is essential.
- A formal system of priorities for processing applications based on essentiality of the product involved.
- Treatment within priority groups according to extent of the particular shortage involved and the degree to which this has been alleviated by expansion already certified. Some chemicals (i.e.. sulfur, nitrogen) as well as atomic energy projects will receive priority treatment.

OPS will shortly issue a tailored regulation to govern sales of private brand drugs and cosmetics at the manufacturer's level.

Drug and cosmetic makers had argued for the special treatment, complaining that they couldn't operate under the present set-up because their raw botanicals and other supplies are not under price control.

A sympathetic hearing from another arm of the Government is not expected, however, when the Delaney Committee starts West Coast hearings on the use of chemicals in cosmetics this month.

Cosmetics in general, rather than any particular types, will be investigated according to Committee Counsel Kleinfeld.

Hollywood cosmetics manufacturers will have an "opportunity" to appear conveniently when the Delaney jaunt touches Los Angeles.

In Chicago, use of DDT by milk producers and distributors who supply the city's milk, was banned by the head of the health department.

He threatened revocation of permits for violations, stated "the potential hazard of DDT has been greatly underestimated."

But he is way behind the U.S. Department of Agriculture, which several years ago advised against DDT on or around dairy farms, milk plants.

The Navy Department will now buy rodenticides for all three military services. It purchases insecticides for all three too.

Add an up-and-coming quaternary family to your new product file: Atlas Powder Co.'s morpholinium ethosulfates.

Most prominent is the N-soya-N-ethyl derivative (trade-named G-271) which is the little publicized hair conditioner and deodorant in many popular wave-set formulations. It is also going into shampoos and mouthwashes.

The other, N-cetyl-N-ethyl morpholinium ethosulfate (G-251), is similar in properties but more suitable for special textile applications.

. . . The Editors

MPS-500

some things you will want to know about this new low-cost vinyl plasticizer

what it is

MPS-500 is a stabilized, chlorinated ester of a fatty acid, in which the chlorine content is controlled to give best balance between compatibility and plasticizing efficiency.

its chief advantages

MPS-500 is lower in cost than most primary plasticizers. It shows excellent compatibility with vinyl chloride polymers and copolymers, is highly permanent and flame retardant.

qualities it can impart to your product

- Flame retardance
- High resistance to water, oil, gasoline
- High permanence on heating
- Excellent electrical properties
- High tensile strength at high flexibility
- Low migration

what you can use it for

- Transparent and opaque films
- Upholstery and drapery
- Shoe soles
- Electrical insulation
- Hose covering
- Organisol and Plastisol formulations
- Softener for nitrile rubbers

BULLETIN 35 gives you properties of MPS-500; comparisons with other plasticizers; detailed test data; typical formulations and uses. Write today, on your company letterhead, for a copy.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

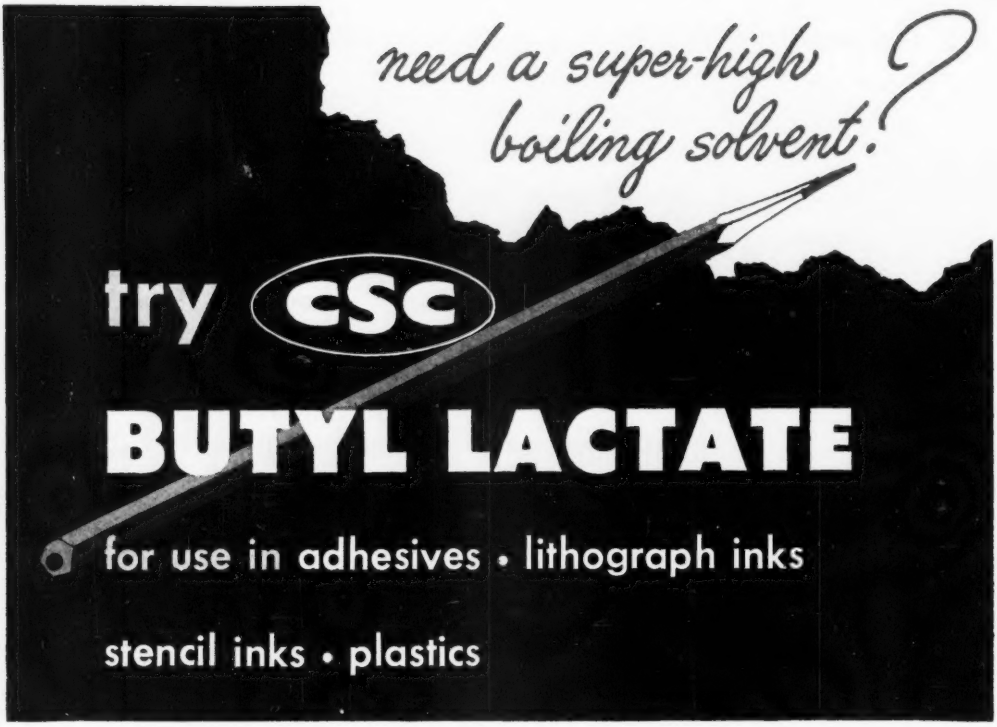
3 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

HOOKER CHEMICALS

1-865

BENZOIC ACID • CHLOROTOLUENE • SODIUM BENZOATE • CAUSTIC SODA • MURIATIC ACID • CHLORINATED PARAFFIN • CHLORINE



BUTYL LACTATE is useful in these and other products largely because of its unusually powerful solvent action and slow rate of evaporation. In adhesives it serves as a temporary plasticizer, improving the strength of the bond and insuring good adhesion to coated surfaces and many plastics. Inks containing butyl lactate are characterized by their "bite" on plastic surfaces. As a "fugitive" plasticizer it facilitates drawing or shaping plastic sheets and articles.

Miscible with most organic liquids and possessing excellent blending characteristics, butyl lactate is an ideal solvent for nitrocellulose, ethyl cellulose, cellulose acetate butyrate, certain vinyls and other gums and resins.

Butyl lactate shows promise in the synthesis of special plasticizers, modified resins and plastics. Investigation of other reactions involving the active hydroxyl group should also yield rewarding results. Phone or write today on your company letterhead for a sample!

SPECIFICATIONS

Purity, ester by weight, minimum:	95%
Specific Gravity at 20°C/20°C:	0.974-0.984
25°C/25°C:	0.970-0.980
Acidity as lactic acid, maximum:	0.15%
Water (naphtha test):	None
Non-volatile matter, maximum:	0.01 g/100 ml
Color:	Water-white
Distillation Range:	
Below 140°C:	None
Between 155°C and 195°C, minimum:	90%
Between 187°C and 189°C, minimum:	60%
Above 200°C:	None

Physical Properties

Formula:	$CH_3CHOHCOOC_4H_9$
Molecular Weight:	146.18
Boiling Point at 760 mm Hg:	188°C
Vapor Pressure at 20°C:	0.4 mm Hg
Melting Point:	−43°C
Coefficient of Expansion, per 1°F:	0.00055
Weight per U. S. Gallon at 68°F:	8.15 lbs.
Flash Point, Tag Open Cup:	168°F
Refractive Index, n_D at 20°C:	1.4216
Surface Tension at 20°C:	30.6 dynes/cm
Solubility in water at 25°C:	3.5% by volume
Solubility of Butyl Lactate in water at 25°C:	15% by volume

CSC

INDUSTRIAL CHEMICALS DIVISION

COMMERCIAL SOLVENTS CORPORATION

17 EAST 42ND STREET, NEW YORK 17, N.Y.

ACIDS • ALDEHYDES • ALCOHOLS • ESTERS • AMINES • AMINO ALCOHOLS • NITROGEN COMPOUNDS • NITRO COMPOUNDS • SOLVENTS • PLASTICIZERS • INTERMEDIATES

CHEMICAL COMPANY EARNINGS—FIRST 3 QUARTERS 1951

	Gross Sales		Pre-Tax Earnings		Taxes				Net Earnings		Third Quarter Net Earnings	
	1951	1950	1951	1950	1951	%	1950	%	1951	1950	1951	1950
Air Reduction Co. (c)	87,577	71,602	14,385	10,831	9,300	65.0	4,891	45.1	5,085	5,940	1,696	2,32 8
Allied Chem. & Dye Corp. (E)	376,460	291,890	82,592	48,158	52,757	63.8	21,244	44.3	29,835	26,924	9,393	8,236
American Agric. Chem. Co.	.....	.....	7,599	6,299	3,906	51.0	2,645	42.2	3,250	3,415	341	418
American Cyanamid Co.	296,630	229,067	*71,231	44,997	43,000	60.7	23,200	51.7	29,165	22,062	5,710	9,164
Atlas Powder Co.	38,875	29,925	4,502	3,506	2,954	65.6	1,471	42.0	1,548	2,035	379	683
Commercial Solvents Corp.	42,974	28,775	9,426	4,820	4,972	52.7	1,997	41.4	4,454	2,823	1,336	1,504
Davison Chem. Corp. (a) (E)	35,992	35,430	.....	.....	.....	....	.....	....	2,117	1,956	365	308
Diamond Alkali Co.	60,444	38,120	14,830	5,056	9,168	61.8	2,401	47.5	5,662	2,654	1,335	356
Dow Chem. Co. (b)	283,187	192,442	92,891	50,757	62,756	67.5	20,183	39.5	30,135	30,574	8,944	11,894
Du Pont (d)	1,150,723	927,562	375,826	274,895	275,260	73.4	125,560	45.7	100,566	149,335	22,003	58,209
Hercules Powder Co.	164,404	113,906	32,256	18,847	22,770	70.6	8,269	43.8	9,487	10,579	1,649	4,143
Heyden Chem. Corp.	22,927	19,848	5,135	2,648	3,001	58.7	1,167	44.8	2,134	1,481	653	527
Hooker Electrochem. Co.	.....	.....	.....	.....	.....	....	.....	....	.....	.....	.....	.....
Int. Minerals & Chem. Corp. (a)	81,569	69,902	.....	.....	.....	....	.....	....	7,547	6,720	1,033	943
Mathieson Chem. Corp.	69,911	55,969	18,247	10,742	10,490	57.8	4,245	39.5	7,757	6,497	2,188	2,087
Monsanto Chem. Co.	207,120	163,272	48,239	37,481	32,198	67.0	18,517	49.3	16,687	20,762	3,991	8,429
National Cylinder Gas Co.	25,082	20,435	.....	.....	.....	....	.....	....	1,961	1,897	514	703
Nopco Chem. Co.	17,544	13,758	.....	.....	1,747	....	702	....	826	835	75	94
Newport Industries, Inc.	17,356	12,252	3,991	1,130	2,461	61.8	470	41.6	1,530	660	431	348
Penn. Salt Mfg. Co.	36,777	29,618	.....	.....	.....	....	.....	....	3,149	3,137	863	1,071
Chas. Pfizer & Co.	72,968	41,779	29,809	12,765	15,011	50.4	5,385	42.3	8,244	6,777	1,592	2,794
Pittsburgh Coke & Chem. Co.	.....	.....	.....	.....	.....	....	.....	....	.....	.....	.....	.....
Rohm & Haas Co.	82,989	58,741	17,798	9,884	12,458	70.2	4,387	44.4	5,340	5,497	1,300	1,838
Union Carbide & Carbon Corp.	690,531	536,856	205,808	165,380	128,854	62.6	65,970	39.8	76,954	99,410	18,726	38,806
Victor Chem. Works	.....	.....	.....	.....	.....	....	.....	....	2,133	2,732	631	1,009
Virginia-Car. Chem. Corp. (a)	.....	.....	.....	.....	.....	....	.....	....	4,636	3,318	482	352
Company Total	3,862,040	2,981,167	1,034,545	708,256	693,063	67.0%	312,724	43.4%	360,182	417,999	86,856	156,210
Total — except Du Pont	2,711,317	2,053,605	658,719	433,311	417,803	63.4%	187,164	43.2%	259,616	268,664	64,853	98,001
Du Pont as a % of the TOTAL	29.8%	31.0%	.....	.....	.....	.....	.....	....	27.8%	35.8%	23.0%	37.3%

Increase in total taxes for the 17 companies reporting taxes, 121%; excluding Du Pont, 124%.
(a) Final six months of fiscal year ending 6/30/51 plus 1st quarter of fiscal year ending 6/30/52.
(b) Final six months of fiscal year ending 5/31/51 plus 1st quarter of fiscal year ending 5/31/52.
(c) Excludes net dividend income of $494,703 in 1951.
(d) Excludes net dividend income of $88,292,873 in 1951 and $58,209,451 in 1950.
(E) Estimated.

* Includes non-recurring dividend of $5,880,000 out of accumulated earnings of Southern Alkali Co. subsequently sold to Pittsburgh Plate Glass Co.

More Taxes Than Profits

Government tax toll on chemical companies is more than $690 million for first three quarters of 1951. Profits were only $360 million.

This, combined with higher costs, relatively fixed prices, and a slackening in demand for certain products, makes the squeeze even worse for '52.

Thirty-cent dollars will be the burden of the chemical industry until Congress gets around to consideration of another tax measure at the next session. Reason for this state of affairs: The chemical industry as a whole is in the excess profits tax bracket, and hence most companies are now paying taxes at the legal maximum rate—70% for the last three quarters of 1951 and 62% for the first quarter.

Squeeze Is On: It is questionable whether chemical companies will be able to maintain this benevolent (to Uncle Sam) position. First, costs of operation are rising faster than prices allowed by the Office of Price Stabilization, and the well-known squeeze between relatively fixed prices and continually increasing costs is on—and in a big way. Second, demand for many chemical products is abating from the we'll-take-all-you-can-give-us frenzy that has prevailed since Korea.

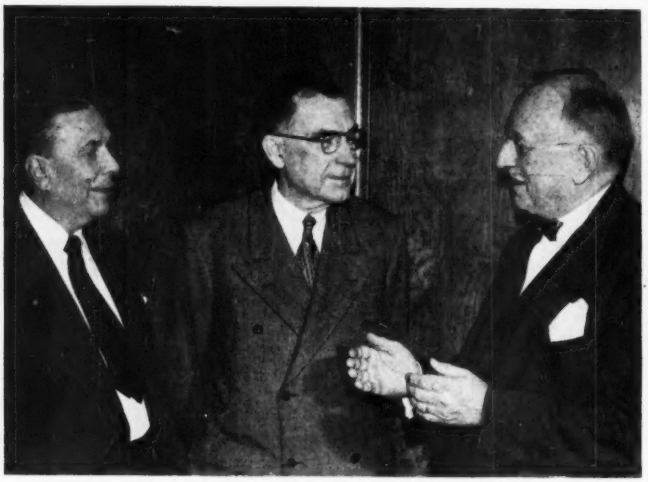
At first glance it would appear that Du Pont had been particularly hard hit by the textile slump. Third-quarter earnings are down from $58 million for the third quarter of 1950 to $22 million for the corresponding period in 1951. The industry (24-company sample) showed a profit drop of 46.5%.

Du Pont was down 62%, but the company has allowed well over the maximum tax rate for the third quarter—82.5%. If profit is refigured at the now maximum rate of 70%, the company's net income is down only 38%—in line with other chemical companies.

Retroactivity Did It: This sizable drop in earnings is not a long-term affair, however. It is caused by the retroactive provisions in the new tax law. As noted before, the previous maximum tax of 62% was raised to 70%; but Washington pulled one of its favorite shenanigans: The increased tax was made retroactive to start with the second quarter of 1951. Thus companies which had figured taxes at 62% for the first half were forced to take out the rest of the "unknown" tax liability. For seventeen companies that reported the tax withheld was a whacking 73.9%—only 62.4% was reported for the first half.

Honeymoon's Over: In any event, the industry can look forward to a period of reduced profits until new facilities now a-building come on stream. Reason: Softened demand for many chemical-consuming commodities has forced prices down.

Lower civilian demand is countered by sharply increased military orders for many products. But in general, government orders do not allow as high a rate of profits.



YOUNG TO CARLTON, McKNIGHT: $30 million for 3 M in '52.

Forced Into Business

Minnesota Mining & Manufacturing Company will spend about $5 million to make a direct entry into foreign markets. A newly formed subsidiary, Minnesota Mining & Manufacturing International Co. will direct production and sales. For the first time, many of 3M's established products and a number of new ones will be sold abroad under domestic trademarks.

Formerly, most of 3M's foreign sales were abrasives, tapes, and adhesives. Now, by expanding newly acquired facilities and building several new plants, the line will be widened to include chemicals, synthetic rubber, coatings, sealants, rock products, and graphic arts products. Expansions of both volumes and products are already underway in Great Britain, France, Germany, Brazil, and Canada.

3M's announcement followed hard on a similar announcement by Norton Co.—also an abrasives manufacturer—that it together with its subsidiaries (Behr-Manning Corp. and Norton-Pike Co.) had organized a subsidiary to be known as Norton-Behr-Manning Overseas, Inc. This new company will handle export of its domestic abrasive products as well as supervise plants in Australia, Canada, Great Britain, France, Germany, Italy, and South Africa.

No Coincidence: 3M and Norton Co., together with Carborundum Co., were members of Durex Corp., a manufacturing company, and Durex Abrasives Corp., an exporting organization. Both had been organized under terms of the Webb-Pomerene Act by American abrasives manufacturers in the late '20s. The Act gave domestic competitors the right to band together for export purposes, but the government changed its mind: An anti-trust action was brought against Durex stockholders. Result: a U.S. District Court directive calling for dissolution of the Durex Corp. by April 30, 1951.

Durex Corp. operations ground to a halt soon after—July of this year. Member companies decided who got what, and each went its own way. The exporting organization, Durex Abrasives Corp., was adjudged legal, but the member companies decided to pull out of that too. It would have been impratical to operate a foreign plant and at the same time participate in an exporting company that competed with the plant.

Carborundum: Of all the member companies Carborundum Co. probably had the easiest transition. The company already had a corps of foreign distributors at the time of the break-up. It now maintains an export sales department and owns manufacturing firms in Great Britain, Germany, Norway, and Canada. According to E. R. Broden, executive vice-president of the company, Carborundum does not plan to follow the Norton and 3M lead. The Durex break-up, he maintains, has not hurt Carborundum's sales, and its present foreign set-up seems highly satisfactory.

Big Stakes: Both 3M and Norton, despite unsettled world conditions, look forward to a rapidly expanding market. 3M expects $30 million in sales for its products during 1952, an increase of 50% over 1950. Chairman Wm. L. McKnight, President R. P. Carlton, and newly appointed subsidiary President R. W. Young believe even this estimate to be conservative. Herbert A. Stanton, president of Norton-Behr-Manning Overseas, Inc., sees more complete coverage in foreign markets for his firm's products, too.

Chemical Show

The 23d Exposition of Chemical Industries will open at Grand Central Palace, New York, on Nov. 26, and run through Dec. 1. And judging from a look CW had at the plans, this year's is going to be one of the best. Past exhibitions have accomplished much in getting new developments to the industry, in cultivating ideas and projects, in providing an interchange of knowledge, and in stimulating new industries to grow, and old ones to advance. This year's will be no exception; there will be something for everybody at Grand Central Palace.

Every phase of the chemical industry will be covered, from the lab, through the pilot plant, to the full-scale factory. There will be exhibits of such basic interest that every branch of the industry will probably want to see them, and exhibits for many specialties, no matter how small. Over 400 companies, representing nearly 250 different classifications of equipment, materials, supplies, and services, will exhibit.

Products and Methods: The displays will combine the products of both chemical engineering and industrial chemistry, bringing under one roof the latest available information on both products and methods. All exhibits will be manned by experts, ready and willing to answer questions and solve problems.

Processing equipment will constitute a large proportion of the displays. Much of it is designed for specific applications, but a lot consists of standardized products suitable for many industries. Developments range from minute, but important, modifications of standard equipment, to new types shown for the first time.

The continuous and rapid evolution of improved structural materials, and their equally rapid incorporation into the design of equipment, will be one of the featured facets of the exposition. These metallurgical advances will range from large and intricate processing equipment to drums and valves.

New Instruments: The major progress in development of new items will be reflected in the line of instrumentation, particularly as it applies to field and line testing, as compared to research. But laboratory advances will not be neglected. Many exhibits will show the latest aids for the research and control people.

In short, there will be something for everybody in the chemical industries, and for many who, technically, are not in the chemical industry. Much of the future of the industry will be on display when the doors open on Nov. 26.

Current List of DPA-Certified Chemical Facilities

COMPANY	LOCATION OF FACILITY	PRODUCT	AMOUNT ELIGIBLE	PERCENT
Monsanto Chemical Co.	Springfield, Mass.	Resins		50
Monsanto Chemical Co.	Springfield, Mass.	Polyvinyl chloride resin		60
Groveton Papers Co.	Groveton, N.H.	Sulphite Pulp		60
Union Carbide & Carbon Corp.	Bound Brook, N.J.	Resins		65
Aluminum Co. of America (St. Lawrence Plant)	Massena, N.Y.	Aluminum		70
Union Carbide & Carbon Corp.	Bound Brook, N.J.	Phenol-formaldehyde resins		50
Winthrop-Stearns, Inc.	Rensselaer, N.Y.	Pharmaceutical products		70
E. I. Dupont de Nemours & Co.	Niagara Falls, N.Y.	Polyvinyl alcohol		50
Union Carbide & Carbon Corp.	Niagara Falls, N.Y.	Calcium carbide		60
Mathieson Chemical Corp.	Niagara Falls, N.Y.	Benzene hexachloride		50
Air Products, Inc.	Iselin, N.J.	Oxygen		50
Esso Standard Oil Co.	New York, N.Y.	Petroleum and products facilities		15, 55, 75, 100
Kawecki Chemical Co.	Boyertown, Pa.	Titanium double fluorides		60
Polymer Corp.	Reading, Pa.	Teflon		70
Stauffer Chemical Co.	Monongahela, Pa.	Carbon bisulfide		50
Allied Chemical & Dye Corp.	Marcus Hook, Pa.	Insecticide		50
Warner Co.	Devault, Pa.	Magnesium Oxide		60
The New Jersey Zinc Co. of Pa.	Palmerton, Pa.	Zinc		60
Southern Alkali Corp.	Natrium, W. Va.	Benzene hexachloride		50
Union Carbide & Carbon Corp.	South Charleston Kanawha County, W. Va.	Polyethylene plastic		70
Union Carbide & Carbon Corp.	South Charleston, W. Va.	Vinyl chloride resins		60
E. I. Dupont de Nemours & Co.	Parkersburg, W. Va.	Teflon		70
Air Products, Inc.	Parkersburg, W. Va.	Oxygen		50
Union Carbide & Carbon Corp.	Kanawha County, W. Va.	Benzene, coal chemicals or pitch coke		50
Virginia-Carolina Chemical Corp.	Charleston, S.C.	Phosphorus	$664,085	50
Alabama Oxygen Co.	Birmingham, Ala.	Oxygen and acetylene		50
The Dow Chemical Co.	Midland, Mich.	Styrofoam		60
Union Carbide & Carbon Corp.	Ashtabula, Ohio	Ferrosilicon		75
The Dow Chemical Co.	Midland, Mich.	Chemical products		50
Aurora Gasoline Co.	Detroit, Mich.	Butylenes	400,000	75
The Dow Chemical Co.	Midland, Mich.	Saran resin		60
Air Products, Inc.	Flint, Mich.	Oxygen		70
The Dow Chemical Co.	Midland, Mich.	Styrene-butadiene		50
Allied Chemical & Dye Co. The Barrett Div.	Ironton, Ohio	Naphthalene and quinoline		70
The Dow Chemical Co.	Midland, Mich.	Various chemicals		50
Allied Chemical & Dye Corp.	South Point, Ohio	Urea		50
The Dow Chemical Co.	Midland, Mich.	Chemical products		50
Air Products, Inc.	Granite City, Ill.	Oxygen		50, 70
Commercial Solvents Corp.	Terre Haute, Ind.	Benzene hexachloride		
Commercial Solvents Corp.	Terre Haute, Ind.	Antibiotics		50
The Liquid Carbonic Corp.	Chicago, Ill.	Oxygen		65
Reynolds Metals Co.	Gary, Lake County, Ind.	Polyvinyl chloride film		50
The Dow Chemical Co.	Freeport, Texas	Propylene glycol		60
The Dow Chemical Co.	Freeport, Texas	Caustic soda		50
The Dow Chemical Co.	Freeport, Texas	Butadiene-styrene latex		50
Malvern Brick and Tile Co.	Malvern, Ark.	Refractories		50
E. I. Dupont de Nemours & Co.	La Porte, Texas	Fungicides		85
Southern Alkali Corp.	Lake Charles, La.	Chlorine and caustic soda		50
The Dow Chemical Co.	Freeport, Texas	Glycols, magnesium metal, styrene		50
Reynolds Metals Co.	Saline County, Ark.	Alumina		50
The Dow Chemical Co.	Freeport, Texas	Chlorine		70
The Dow Chemical Co.	Freeport, Texas	Magnesium oxide		50
Monsanto Chemical Co.	Long Beach, Calif.	Styrene polymer	468,113	60
The Dow Chemical Co.	Pittsburg, Calif.	Chlorine, caustic soda		50
Pacific Coast Borax Co.	Boron, Calif.	Boron ores		25
Industrial Air Products Co.	Medford, Ore.	Oxygen		70
Stuart Oxygen Co.	Pacific Coast Use	Oxygen and acetylene		50
Air Reduction Co., Inc.	Within U.S.	Oxygen		70, 50

New Ground Rules

In two days certificates of necessity were issued by DPA for 456 new or expanded defense facilities. This huge number was processed to meet the deadline that had been set up by statute.* And at the sale time that this list was issued DPA's moratorium on issuance of such certificates was terminated.

The moratorium was necessitated on Aug. 18 by the shortage of certain critical materials and to enable DPA to review ". . . administrative procedures and criteria for granting future certificates of necessity."

Termination of the moratorium has resulted in the issuance of a new set of ground rules for playing the certificate ball game:

- Certificates on construction commenced *after* Nov. 1, 1951, are to be issued only if DPA has determined the shortage of the facilities and essentiality of the product prior to start of construction.
- Applications on file are to be reviewed and applicants are to be canvassed to find if construction has started or is still contemplated, and whether an allocation of materials has been requested.
- A formal system of priorities, based on the need for the product, is to be adopted.
- Treatment within priority groups is to be based on the extent of the shortage and the degree that already certified expansion has reduced it.

Chemical products fare badly in the first new priority list. Only sulfur and nitrogen are noted. The first ten include:

1. Machine tools, cutting tools, dies, gages, jigs and fixtures.
2. Ores such as copper, lead and zinc.
3. Pig iron.
4. Sulfur.
5. Military end items and supporting products urgently needed by the Armed Forces.
6. Basic aluminum.
7. Nitrogen.
8. Aviation gasoline.
9. Steel scrap.
10. Special aluminum extrusions.

However, this list is not fixed, will be revised from time to time to meet current conditions. The availability of critical materials will become increasingly important in the determina-

* In no event shall an amortization deduction be allowed . . . in the case of an emergency facility completed or acquired . . . before the date of enactment of the Revenue Act of 1950 (Sept. 23, 1950), unless a certificate . . . shall have been made prior to the expiration of 12 months after the date of enactment of the Revenue Act of 1950."

tion of whether a certificate should be granted, and it is for this reason that DPA proposes to canvass all existing applications to ascertain whether construction has started.

Determination of the abandoned applications will aid in issuance of additional certificates. The balance of the replies will provide a check on critical materials to determine the order in which pending applications will be processed. Completion of this study should tell DPA what other rule changes may be required.

Lengthened Shadow

The dynamic growth—both qualitatively and quantitatively—of Corn Products Refining Co. reflects in large measure the stature of its president, Ernest W. Reid. In recognition of his accomplishments, the Society of Chemical Industry last week honored Reid with the Chemical Industry Medal.

If "an institution is but the lengthened shadow of a man," it follows that a man can be measured by the institutions he directs.

Quiet, Kansas farmer-New York industrialist Ernest Reid went to Washington in 1939 to help organize the Chemicals Branch of OPM (Office of Production Management), which later became WPB (War Production Board). Under his direction the Branch grew from a dozen desks and a few telephones to a smoothly running organization of some 500 employees.

His spadework finished, Reid left WPB in 1943 to become vice president in charge of research and development for Corn Products Refining Co., world's largest processor of corn. In April of this year he was elected president.

It is surely no coincidence that the year after Reid—B.S. in organic chemistry from Southwestern College* and Ph.D. in chemical engineering from the University of Pittsburgh—joined the organization, a Chemical Division was organized and the chemical engineering staff expanded from 4 to 58.

Seven Fat Years: Corn Products' accomplishments during the past seven fat years have revolutionized the corn milling industry. This centuries-old, rule-of-thumb craft has been transformed into a chemical process industry. The company's modern, functional and architecturally imposing plant at Corpus Christi, Texas, embodies continuous processing to make dextrose—an achievement made possible by instrumentation and automatic ion exchange; improved processes for wet milling and starch manufacture; utilization of grain sorghum as an industrial raw material; and many other innovations.

ERNEST REID: Grows crops, grows ideas.

Too, the company's product base has been broadened by development of processes to make the pharmaceuticals, inositol and glucuronolactone. The former is now made on a large semi-works scale, and a glucuronolactone production unit is currently being built.

These developments, the company's worldwide enterprises, and continuing research all come under Reid's scrutiny—and he still finds time, not only to fish and patronize the arts, but also to run his Kansas farm successfully, as he does his business, without Federal subsidies.

Road Back

An infant, but a lusty one. This, essentially, is the description of the European petrochemical industry brought back by C. E. Waring, research vice president of Davison.

Many chemical industries that in this country have shifted from coal to natural gas or oil as a basic raw material over the last 10 years or so, have not been able to follow suit in Europe since natural gas is all but non-existent, and refining has been limited up to now.

But the situation is changing; refineries are literally mushrooming throughout England and Western Europe. Present growth rate for consumption of petroleum products is now estimated at 20% a year compared to about 3-4% in this country.

This is forcing a rapid growth of refineries despite many serious economic problems. As the refineries go up, chemical companies are forming partnerships with the oil companies, and giving birth to a petrochemical industry.

Necessity Again: As in the past, and in other branches of the chemical industry, the growth of petrochemicals is a matter of necessity. Despite the return of German Ruhr mines to operation, coal is very short in Europe. Recent discovery of natural gas in the Po valley may help Italy solve the problem, but for the rest of Western Europe it's petrochemical raw material or nothing.

Whereas in this country we tend to adopt a process only when it is of economic advantage, the recent history of the European chemical industry has been largely one of adopting the only available process, and making it economically advantageous.

Such was the case of the industries based on sulfur. As Waring points out, most European sulfuric acid plants never used elemental sulfur, but now, with economic difficulties making even the importing of pyrites all but impossible, European industries are turning to gypsum, and are finding ways to make end products without sulfuric.

Raw Materials Lack: While each country of Western Europe has its peculiar problems—France, for example, is very short on capital—the basic troubles are the lack of raw materials, and the lack of sufficient power.

Almost all basic raw materials must be imported—many of them from the dollar area where Europeans are in an economic squeeze. Coal is the villain in the power shortage as well as the raw material pinch. This is a typical example of the cleft stick Europe is in: They can't expand those industries based on coal as a raw material and have power as well.

The problem comes down to finding ways to use the cheapest possible imported raw materials, preferably not from the dollar area, and developing ways to use what raw materials they do have. But it is a long hard road. Almost all developments in petrochemicals have been based on the use of Middle Eastern crudes. If these are lost, it is anyone's guess where substitutes will come from.

With all its troubles, and in spite of continuously arising new problems, the European chemical industry is definitely on the road back. In France alone, Waring estimates a further 60% increase over 1938 production, and in England the industry is actually lifting itself by its bootstraps.

* At Winfield, Kan., where tennis-player Reid met tennis-player Leila English, now Mrs. Reid.

STANDARD'S HEARD: Burning gas and phosphine smoke rings link ledgers with cat crackers.

PRODUCTION SHOW: Conjuring up an inflammable boron compound.

Office Education

"Bring the lab to the office", decided top brass of Standard Oil Co. (Ind.). Result: Four packing cases and a Ph.D. arrived to explain how "The Science of Combustion" fills the pay envelope.

Standard wanted to breathe some life into its products for its office workers. It felt that a nodding acquaintance with a long name on an order blank surrounded by figures was not enough —the mystery of what it does, why, and how it does it should be unveiled.

Unfortunately the research lab was a good twenty miles away from its Chicago general offices, and transportation would be a problem. And a conducted tour would require at least a day of tramping in and out of rooms and along corridors.

The company knew, too, that tours are apt to be a disappointment. Spectacular experiments and apparatus with wheels turning and lights flashing are more frequent on a Hollywood set than in an oil company lab. Studying reactions usually isn't very dramatic.

For these reasons Standard decided to bring the mountain to Mahomet by lumping a number of simple demonstrations together and getting a good man to talk about them. Llewellyn Heard, who taught freshman chemistry at the University of Georgia in the early '30s, was its pick.

Heart in His Work: Heard is a good showman and obviously enjoys being back in harness. His droll explanation of combustion is punctuated by incandescent smoke rings and minor explosions. He even "loses" a finger at one point.

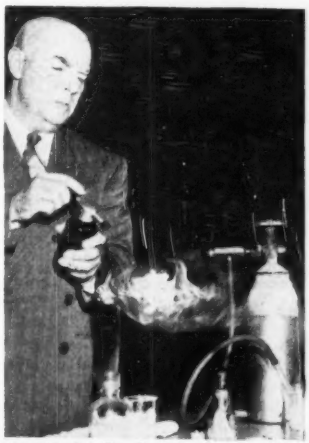
The demonstration is short enough to hold interest, and Heard sticks to the layman's language. Technical details are pared and there's no hint of the long research which led to the processes now accepted as everyday practice.

This typical excerpt shows why the "lecture" makes a hit with the office help:

"About 1911 crude gave only 18% gasoline, 1% light ends and 40% gas oil. The trouble was that no one wanted to buy the gas oil and it began to pile up. On top of this Henry Ford and his colleagues began to outrun the refiners. So thermal cracking was invented to chop big molecules into small ones.

"But we put our foot in it again because light ends jumped up to 12% and there was no market for them. So we started gluing them together with a process called polymerization. Now we get 42% gasoline from crude and could go to 95% if we wanted to."

From listeners comments after the show, it is obvious they enjoy it, learn the basic facts behind their bread-winning. It is also clear that Standard's formula—simplicity, informality and brevity—is a good approach to any non-technical employee education a technical company wants to tackle.



MAGIC: Gasoline heavy ends put matches out, but burn when sprayed.

FOREIGN. . . . . .

Sulfuric Acid: A new sulfuric acid plant is proposed at Whitehaven, Cumberland, England, to be built at a cost of about $6.3 million. Raw material will be local gypsum recently discovered in the St. Bees Valley two miles south of Whitehaven.

•

Antibiotics and ACTH: Latest figures released by the French Ministry of Public Health show that France has changed in the last five years from one of the world's biggest importers of antibiotics to an important exporter. Nearly $3¼ million worth of penicillin and streptomycin was exported in 1950. Of this, penicillin accounted for a little over $2 million.

These export figures indicate that France is producing antibiotics at a rate of 1,830 billion Oxford units of penicillin and 2,860 lbs. of streptomycin per month.

The Australian government has decided to ban all exports of aureomycin, chloromycetin, streptomycin, dihydrostreptomycin, penicillin, phenothiazine, and all sulfa drugs. In addition, the ban will apply particularly to the export of pituitary glands

The Treasure Of Kilimanjaro

WHEN THE SEARCH for sulfur began, some said they would go to the ends of the earth for it—but few realized how right they were. Now, on the summit of world-famous Mt. Kilimanjaro in East Africa, 19,710 ft. above sea level, where eternal snow rests on the equator, a god to the natives in its shadow, and legendary resting place of King Menelik's buried treasure, geologists have discovered a modern treasure—sulfur. In the inner crater of the mountain, only 400 feet below the summit, an expedition of the Tanganyika Government has discovered a deposit of several thousand tons of pure sulfur. Now officials are wondering just how extensive the find is, and how they can make commercial use of it.

---

used in the manufacture of ACTH.

While no official explanation was given for the bans, experts think that Australia is stockpiling drugs, may plan to use the ban on the ACTH raw material as a bargaining tool for greater allocations of the drug. It is also quite possible that Australia plans to manufacture ACTH in the near future.

•

Carbon Black: The English licensee of Phillips Petroleum Co., Philblack Ltd., has just opened its new $6.3 million carbon black plant at Avonmouth, Bristol, England. The plant is designed to produce more than 50 million lbs. a year, which is equal to 50% of present United Kingdom consumption.

The plant is using the American process based on petroleum fractions as a raw material, and is the largest of its kind outside the U.S.

•

Wool Dye: Farbwerke Hoechst, Frankfurt, Germany, has developed, and is now marketing, a new homogeneous acid dye for wool, under the trade name Wollechtviolett FR. Highly soluble, the dye is claimed to be especially suited for automatic dyeing. It is said to be water-fast and resistant to carbonization and steaming.

•

Synthetic Ammonia: Brazil's oldest chemical manufacturer, Cia Quimica Rhodia Brasileira, will go into production next month of synthetic ammonia for the Brazilian refrigeration industry. The company will also produce 24/25% liquid ammonia for general industrial purposes.

•

Caustic and Soda Ash: South America's first big soda plant has been constructed near Bogota, Colombia, and is now going into operation. The plant will produce 36,500 tons of soda ash, 11,000 tons of caustic soda, and 4,500 tons of sodium bicarbonate a year.

EXPANSION . . .

Sulfur: A 20 ton-a-day sulfur recovery unit will be built by Gulf Oil Corp. at its Waddell, Texas, natural gasoline plant. There 38 million cubic feet of gas are treated per day to recover 45,000 gallons of natural gasoline.

In addition to the sulfur recovery unit which Gulf Oil Corp. is erecting at Waddell, Texas, the company is building a similar unit at its Port Arthur, Texas, refinery. The Ralph M. Parsons Co. will build the plant, which will recover 60 tons per day of elemental sulfur from the refinery off-gases. The sulfur is to be converted to sulfuric acid at the refinery for use in the manufacture of alkylate. First operation is scheduled for June, 1952.

Also, Consolidated Paper Corp. has started construction at Grand-Mere, Que. of a $500,000 plant capable of producing 4,000-5,000 tons of elemental sulphur per year from Quebec pyrite ores. The plant is scheduled to be completed next summer.

•

Resorcinol: The resorcinol plant originally proposed by Borden Co. for Tacoma, Wash., is now slated for Dominguez, Calif., because of insufficient raw materials. The $600,000 facility, to produce one million pounds of resorcinol per year, will be located on a 7½-acre tract adjacent to the plant of the Stauffer Chemical Co.

•

Hexachlorethane: Defense Industries, Ltd. is reactivating the wartime plant at Shawinigan Falls, Que., for manufacture of hexachlorethane, for use in production of smoke bombs.

•

Resins: Operations have just started at Catalin Corp.'s new resin manufacturing plant at Thomasville, N. C. The new unit will specialize in the production of textile finishing resins and urea, phenolic and resorcinol resin glues.

•

Kraft Paper: Ground was recently broken at Valdosta, Ga., for National Container Corp.'s new $25 million pulp and paper mill.

When completed the mill is expected to employ from 700 to 1,000 and produce 500 tons daily of kraft pulp board and paper. The mill will increase National Container's output by about 50%.

•

Paper: Monadnock Paper Mills, Inc., Bennington, N.H., has taken options on a site for a proposed $20 million paper plant on the Watauga River near Elizabethton, Tenn., according to city officials.

The new mill is to be financed by a $20 million bond issue, which citizens are to vote on at a referendum to be held Nov. 15. The city would construct the plant, to manufacture wrapping paper, and lease it to the company.

•

Mathieson: The boards of directors of Mathieson Chemical Corp. and Mathieson Hydrocarbon Chemical Corp. have adopted a plan for merger.

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A new dark colored synthetic wax, Wax S1167 substantially as effective, at a very low cost, now is available in carload lots at $.18/lb. It is tough, flexible, not tacky and has a Ball and Ring melting point 120°–125°C (248°-257°F). Wax S1167 has good electrical properties, stability at low temperatures without cracking, and good adhesion to metals.

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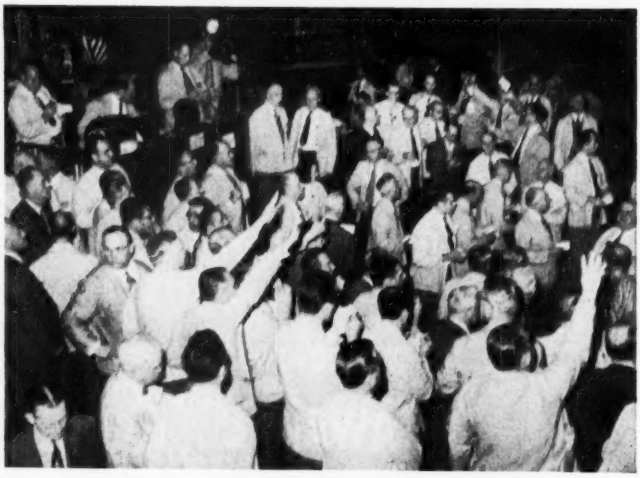


Now—Futures Trading on Sorghum

INITIATION OF SORGHUM FUTURES TRADING in Chicago will link the main production area, Texas, with a national market. Although gaining in importance as a raw material for alcohol, starch and other products, sorghum has been handicapped by regional trading. Even so, the crop climbed from 50 million bushels in 1938 to 238 million in 1950. Corn Products has a $10 million sorghum refinery, Publicker has been using it for alcohol production and Hiram Walker is experimenting with it.

• Mathieson Hydrocarbon shareholders are to receive ⅔ of a share of Mathieson Chemical stock for each share of their stock; 385,778 shares of Mathieson Chemical stock will be required for the exchange.

• Four shares of Mathieson common are to be issued for each of the 23,777 shares of Mathieson preferred.

• Authorized common stock will be 4 million shares and 3,142,754 shares will be outstanding after the merger.

• A total of 250,000 shares of new preferred are to be authorized for sale after completion of the merger.

•

Ammonia: Consumers' Cooperative Association (CCA) is planning to build a $16 million nitrogen fertilizer plant at Lawrence, Kan. The synthetic ammonia unit is to be constructed on a 320-acre tract east of Lawrence and will use natural gas from the nearby pipeline of the Cities Service Oil Co.

•

Matches: Nevada Match Co., Inc. will build a $100,000 factory on a ten-acre site at Carson City, Nev. It is to be in production by June, 1952.

•

Waste Dispersal: Weyerhaeuser Timber Co. has asked the Portland District, Corps of Engineers, to approve a 1,400-ft. extension of its existing sewage outfall into the Columbia River from its Longview, Wash., pulp mill. Purpose: dispersal of pulp mill wastes over a wider area to reduce pollution. Much of the mill's sulfite liquor waste is being burned, but a large volume of water from the bleaching process still must be discharged. Longview Fiber Co. recently announced plans for a similar outfall extension.

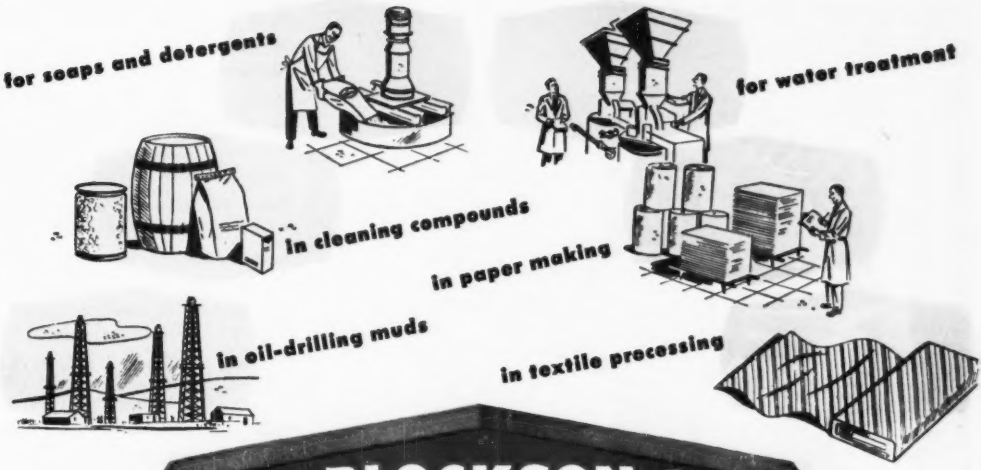
•

Refractories: Over-all output of Harbison-Walker Refractories Co.'s Baltimore, Md., plant will be expanded by about 20% by recent additions. First opened in 1947, the plant manufactures magnesite, chrome and forsterite brick cement.

•

Electrodes: Aluminum Company of America has started construction of an additional oil-fired ring-type carbon baking furnace at its Vancouver, Wash. plant. To cost more than $1 million, the furnace will have an estimated annual capacity of 25,000 tons of finished electrodes. The new furnace will be of the same size as two existing ones, erected in 1940, but will be of an improved design.

The new furnace is intended for use primarily during peak periods, such as starting the new plant now under construction near Wenatchee, Wash., or in event of emergency.



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- Chlorinated Trisodium Phosphate
- Trisodium Phosphate, Monohydrate
- Disodium Phosphate, Anhydrous
- Disodium Phosphate, Crystalline
- Monosodium Phosphate, Anhydrous
- Monosodium Phosphate, Monohydrate
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- Sodium Fluoride
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KEY CHANGES . .

William W. Schneider: To board of directors, Monsanto Chemical Co.

Edwin J. Putzell, Jr.: To secretary of the company, Monsanto Chemical Co.

J. Herbert Babcock: To board of directors, Hooker Electrochemical Co.

Deane W. Malott: To board of directors, Owens-Corning Fiberglas Corp.

L. B. Parsons: To director of research and development, Lever Bros. Co.

John R. Lill: To manager, Chemicals Division, J. M. Huber Corp.

Malcolm G. Chace, Jr.: Elected to board of directors to replace Malcolm G. Chace, Sr., International Paper Co.

Douglas Kelly, Jr.: To manager of chemical sales, western division, Lion Oil Co.

Frank E. Maple: To assistant general manager, Industrial Chemicals Division, Commercial Solvents Corp.

Charles H. Slater: To assistant to the vice president in charge of sales, J. T. Baker Chemical Co.

Warren F. Shumacher: To manager, Fine Chemicals Division, J. T. Baker Chemical Co.

James A. Gilruth: From senior editor, Harry W. Smith, Inc., to manager of the advertising and sales promotion division, Atlas Powder Co.

Bernard Lewis: On one year leave of absence from Bureau of Mines, to direct powder and explosives research and development, Ordnance Corps, Department of Army.

Hugh F. Armstrong: To technical manager, Mohsanto-Kasei Kogyo, K. K.

Charles E. Walker: To head newly established Boston sales office for glues and resins, Plaskon Division, Libbey-Owens-Ford Glass Co.

Samuel H. McGaw: To production superintendent, Mt. Pleasant plant, Victor Chemical Works.

Walt Adams: To acting manager, Baton Rouge alumina plant, Kaiser Aluminum and Chemical Corp.

C. F. Bingham: To assistant director of sales, Columbia-Southern Chemical Corp.

J. F. Dockum: To assistant director of sales, Columbia-Southern Chemical Corp.

Bernard V. Ludwig: To sales manager, adhesives and coatings division, Dewey and Almy Chemical Co.

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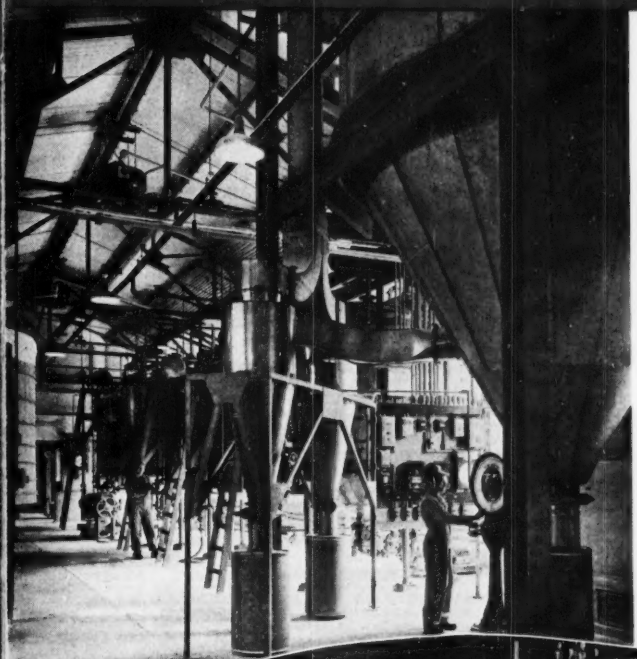

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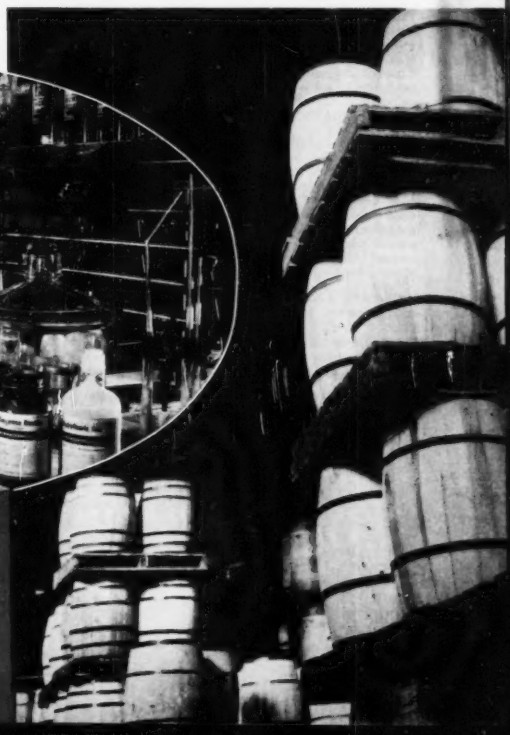

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COMMERCIAL QUANTITIES

STABILIZER 54—An organic phosphate derivative supplied as a soft white paste. *Use:* A light stabilizer for vinyl plastic films and coatings, for application in organosol, latex, and solvent formulations.

POTASSIUM TRIPOLYPHOSPHATE—*Formula:* $K_5P_3O_{10}$. Molecular weight, 448. Melting point, 620—640° C. Density, 2.54. A white crystalline solid. Solubility in water, over 140 grams in 100 ml at 26° C. pH of a 1% solution, 9.4—9.7. *Suggested uses:* The most soluble of the Victor polyphosphates, for applications in formulations containing restricted amounts of water or those requiring a high concentration of polyphosphate for detergent building, dispersing, and sequestering action.

TETRASODIUM MONOPOTASSIUM TRIPOLYPHOSPHATE—*Formula:* $Na_4KP_3O_{10}$. Molecular weight, 384. Melting point, 580—600° C. Density, 2.55. A white crystalline solid. Solubility in water, 30 grams in 100 ml at 26° C. pH of a 1% solution, 9.5—9.7. *Suggested uses:* As a builder for soaps or synthetic detergents, a sequestrant, and as a deflocculating agent for water suspensions of solid particles wherever its greater solubility compared with sodium tripolyphosphate is desired.

TRISODIUM DIPOTASSIUM TRIPOLYPHOSPHATE—*Formula:* $Na_3K_2P_3O_{10}$. Molecular weight, 400. Melting points, 620—640° C. Density, 2.48. A white crystalline solid. Solubility in water, 80 grams in 100 ml. at 26° C. pH of a 1% solution, 9.5—9.7. *Suggested uses:* The greater potassium content results in over twice the total solubility in water as compared with tetrasodium monopotassium tripolyphosphate. It is recommended for use where greater solubility is an advantage, with the usual excellent detergent building, deflocculant, and sequestrant characteristics of the polyphosphates.

VICTAWET 14—*Formula:* $R\text{-}O\text{-}P(OX)_2$. R = alkyl. X = solubilizing group. Molecular weight, about 500. Melting point, below 0° C. Boiling point, decomposes. Specific gravity 1.12 at 25° C. Draves sinking time (0.2%), 30-40 seconds. Yellow liquid, neutral and nonionic, which dissolves in water to form a slightly cloudy solution. *Suggested use:* Nonionic wetting agent.

VICTAWET 34-B—Sodium salt of an alkyl phosphate. A soft white paste containing about 30% water. Readily soluble in water forming a clear foaming solution. Draves sinking time, 15-20 seconds (0.2% soln). *Suggested use:* Anionic type wetting agent.

SEMICOMMERCIAL QUANTITIES

DI-iso-OCTYL PHENYLPHOSPHONATE—*Formula:* $C_6H_5P(OC_8H_{17})_2$. Molecular weight, 382. Melting point, below 0° C. Boiling point, 180-190° C. (1 mm.). Specific gravity, 0.973 at 25° C. Refractive index, $n^{25}D$ 1.4789. A water white neutral ester, insoluble in water but miscible in all proportions with the common organic solvents. Relatively stable to hydrolysis, particularly in alkaline media. *Suggested uses:* Plasticizers, lubricants, or hydraulic fluids.

DI-iso-OCTYL STYRYLPHOSPHONATE—*Formula:* $C_6H_5C_2H_2P(OC_8H_{17})_2$. Molecular weight, 408. Melting point, below 0° C. Boiling point, 185-190° C. at 1 mm. Specific gravity, 0.977 at 25° C. Refractive index, $n^{25}D$ 1.4994. A yellow, slightly viscous neutral ester, insoluble in water but miscible in all proportions with the common organic solvents. Relatively stable to hydrolysis, particularly in an alkaline medium. *Suggested uses:* Plasticizers, lubricants, or hydraulic fluids.

DI-n-PROPYLPHOSPHOTHIONIC CHLORIDE—*Formula:* $(n\text{-}C_3H_7O)_2P(S)Cl$. Molecular weight, 216.67. Specific gravity, 1.123 at 25/4° C. Boiling point, 70-75° C. at 1 mm. Refractive index, $n^{25}D$ 1.4672. A water white liquid. Quite stable to water at ordinary temperatures. *Suggested uses:* Intermediate for organic synthesis.

TRI-n-PROPYL PHOSPHATE—*Formula:* $(C_3H_7O)_3PO$. Molecular weight 224. Boiling point, 97° C. at 4 mm. Specific gravity 1.002 at 25/4° C. Refractive index, $n^{25}D$ 1.4150. A water white liquid. Soluble in common organic solvents. Slightly soluble in water. *Suggested uses:* Plasticizers, solvents.

DIBUTYL PHOSPHITE—*Formula:* $(C_4H_9O)_2PH$. Molecular weight, 194. Boiling point, 72° C. at 0.5 mm. Refractive index, $n^{25}D$ 1.4228. Specific gravity, 0.986 at 25/4° C. A water white liquid. The active hydrogen reacts with alkaline metals as well as with chlorine. It also adds to certain organic double bonds. *Suggested uses:* Intermediate in organic synthesis, solvents, reducing agents.

DIETHYL PHOSPHITE—*Formula:* $(C_2H_5O)_2PH$. Molecular weight, 138. Boiling point, 50-51° C. at 2 mm. Specific gravity, 1.069 at 25/4° C. Refractive index, $n^{25}D$ 1.4061. A water white liquid. It reacts with sodium to form diethyl sodiophosphite, with chlorine to form diethyl chlorophosphate. The active hydrogen atom adds to some types of double bonds in organic compounds forming phosphorus to carbon linkage. *Suggested uses:* Intermediate in organic synthesis, reducing agent, solvents.

DI-2-ETHYLHEXYL PHOSPHITE—*Formula:* $(C_8H_{17}O)_2PH$. Molecular weight, 306. Boiling point, 150-155° C. at 2—3 mm. Specific gravity, 0.929 at 25/4° C. Refractive index, $n^{25}D$ 1.4418. A water white liquid. The active hydrogen reacts with alkali metals and chlorine. *Suggested uses:* Intermediate for organic synthesis, solvents, oil additives.

BORON PHOSPHATE—*Formula:* BPO_4. Melting point, above 1200° C. Density, 2.52. A white water insoluble acid resistant powder. Ignition loss less than 1.5% . P_2O_5 at least 66.5% . *Suggested uses:* Ceramics, enameling compositions, acid resistant coatings.

BOROPHOSPHORIC ACID—*Formula:* BPO_4H_2O. Melting point, decomposes. Density, 1.873. A white water soluble, crystalline, nonhygroscopic solid. Ignition loss, 18.5% . pH of a 1% solution, 2.0. Equivalent to 79% orthophosphoric acid. *Suggested uses:* For non-food applications, this compound is equivalent to a solid nonhygroscopic form of orthophosphoric acid.

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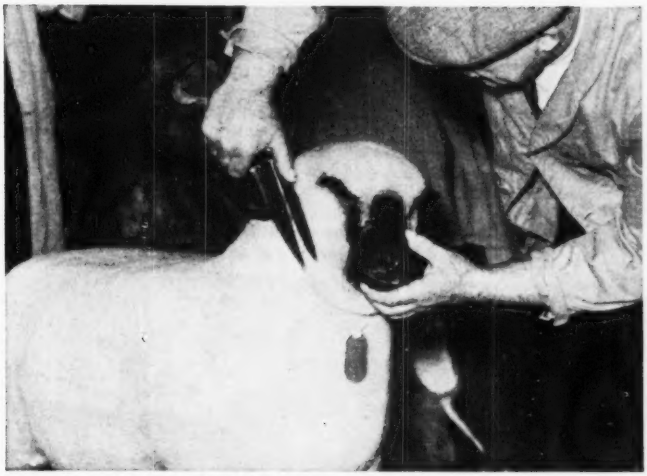

WOOL ON THE HOOF: Propiolactone may mean more for the money.

Wool Build-Up

Treatment of wool with propiolactone is a new research development which may strengthen the fiber's competitive position.

The propiolactone-modified product gains in bulk at no sacrifice in quality; treated wool is softer, whiter and has greater luster than the untreated.

Process development work is now under way, but commercialization may still be a long way off.

New hope for wool growers, in their struggle to stem the encroachment of synthetic replacements (*CW, July 21*), looms on the chemical horizon. Still in the research stage, the chemical modification of wool with β-propiolactone could be a steadying influence on the suicidal fluctuations of wool prices.

This tack isn't idle speculation or mere wishful thinking on the part of the wool people. Their hopes are rooted in the results of an exacting piece of research by H. Walter Jones and Harold P. Lundgren of the U.S. Department of Agriculture's Western Regional Research Laboratory (Albany, Calif.).

Jones and Lundgren were investigating the effect of chemical modification on the physical and chemical properties of wool fibers when they came upon β-propiolactone. The compound is well represented in the literature and recently was commercialized by B. F. Goodrich Chemical Co. But the researchers were in unexplored territory when it came to propiolactone's interaction with proteins.

Nevertheless, there was something to go on. β-Propiolactone reacts with alcohols, amines, carboxylic acids and phenols. All of these, and other reactive groups, are present in the wool-protein. It's not too far-fetched to assume that reaction would take place at the sites of these functions. Reaction does take place; and with gratifying returns.

Wool will take up propiolactone in varying amounts depending upon the mode of pretreatment of the fiber, type of wool, and the experimental conditions. Propiolactone penetrates the fiber, increases its diameter and density, but has little effect on surface scale structure. Net result is effectively more wool for the money at no sacrifice of quality.

The modified wool is softer, has slightly greater luster and less affinity for water than the untreated. Moreover, the felting properties of propiolactone-treated wool shows marked improvement; fibers have better split resistance and higher tensile strength. The wet felts are softer and more pliable than untreated wool felts.

The mechanism of the wool-propiolactone reaction is not yet completely clear, but the evidence points to several clear-cut conclusions. From the amino acid assays of treated specimens comes evidence that histidine and methionine side chains are prominent as chemical hitching posts. Moreover, not all of the propiolactone is chemically bound to the fiber; a portion exists as surface polymer which comes off with suitable solvents.

What's Ahead: The results obtained with propiolactone are purely research data at this stage of the game. But they have not gone unheeded. Goodrich Chemical is now supplying five mills, selected in cooperation with The Wool Bureau, with propiolactone for process development work.

At present work is concentrated on modifications using about 60-70% propiolactone based on the weight of wool. Propiolactone is priced at about 95¢ a pound, wool goes for $2-$4 a pound. Assuming even a 50% wool-weight increase, it isn't hard to understand the cost appeal of propiolactone modification.

It's generally agreed that commercialization is still a long way off. When it does come, it will bring problems. Wool processors think there may have to be a special interpretation of Federal labeling legislation to clarify the status of the modified wool fiber. Then too, a new process will probably mean new, and perhaps strange, equipment for the mill.

Aside from present commercial considerations, the work of Jones and Lundgren is highly significant as the key to a better understanding of the structure and composition of wool protein. From a long-term viewpoint, such research will make possible the day when better fibers by chemical tailoring is an industrial reality.

Aimed At The Heart

International Minerals and Chemical Corp. is now priming its betaine capacity for substantial new demands. Reason: Biochemical and clinical investigations have shown betaine to be of definite value in the treatment of certain forms of heart disease.

Betaine does not do the job alone; its therapeutic potency is tied up with glycosamine, a related nitrogenous compound. A combination of the two, trade-named Betasyamine, is now being turned out by IMC for further clinical research.

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dual drug is a series of preliminary reports published in the latest Annals of Western Medicine & Surgery. Of nearly fifty heart cases investigated, more than two-thirds benefited from the new therapy. Except for occasional gastro-intestinal disturbance, toxic side-effects were lacking.

Biochemical research at California Institute of Technology has shed considerable light on the underlying mechanism of the drugs' activity: Betaine-glycosamine apparently takes part in the formation of phosphocreatinine—the chemical storehouse of muscular and nerve energy. The theory is that a damaged muscle—in the heart, for example—needs more phosphocreatinine than the body can supply. This extra requirement can be made up by administration of betaine-glycosamine.

International Minerals will limit initial distribution of the drugs to medical researchers. The company is now sitting tight, awaiting the completion of further studies which they hope will be the key to all-important medical acceptance.

Cutting It Fine

A NEW ULTRA-MICRO BALANCE, developed by Chicago's Argonne National Laboratory, was the show-stopper at the recent get-together of the American Institute of Physics. The instrument, which will record a difference of a billionth of a gram, is put through its paces by Institute Director Henry Barton.

Primaquine Arrives

Primaquine, newest and most promising antimalarial, has made the grade with the military. Good results in final tests have prompted Defense Department approval of the drug as standard preventive medication. All service personnel returning by ship from Korea will receive primaquine and the more conventional chloroquine.

Military attention focused on primaquine early in 1948 when tests on prisoners at Stateville Penitentiary (Joliet, Ill.) pointed up the potency of the drug and the lack of untoward side-effects.

After three more years of investigation the Army had enough faith to take primaquine into the field and try it on veterans of the Korean fighting (*CW, Sept. 8*). Final testing was completed early this month.

No Competition: Primaquine will not replace well-entrenched chloroquine on military drug shelves. Each drug has its own place in malaria therapy.

Eli Lilly & Co. is sole manufacturer of primaquine, but the drug is not patentable and presumably could be made by any one with the right facilities. However, that's only part of the story.

The government now has a patent pending on a new process for the manufacture of primaquine. When the patent comes through, the process well be available to industry on a license basis. The drug's availability is now limited to experimental use. Despite its success thus far, primaquine will come in for a good deal more investigation. Research is still being continued by the Army and the U.S. Public Health Service.

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- Production of the first solvent crystallized, low-titer vegetable fatty acids for alkyd resin manufacture.
- Introduction of Emersol 132 Lily Stearic Acid, the highest quality crystalline stearic acid available.
- Production of Emersol 233LL Elaine, the world's purest commercial oleic acid.

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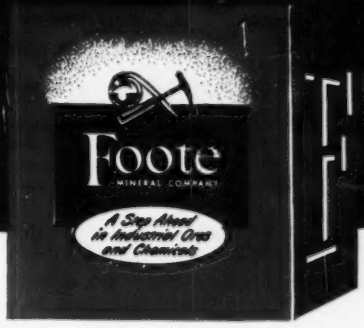

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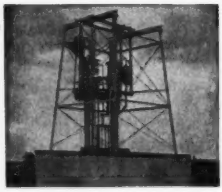

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RESEARCH . . . . .

Low Foamer: Hercules Powder Co. has come up with a new low-foaming, non-ionic surface active agent for use in powdered detergents. Called Synthetic D-37, the new non-ionic has high surface activity and detergency even at low concentrations. Stability in both acid and alkaline solutions is good. Another important feature is its performance in hard waters. Samples, in the form of a 100%-active paste and an 85%-active liquid, are available.

•

Research Expansion: A new laboratory building marks a three-fold expansion of research facilities at the United Lacquer Manufacturing Corp., Linden, N.J. An important objective of the new expanded setup will be research on new materials for the defense effort. In addition to its own research, United Lacquer will work on customers' finishing problems.

•

New Rubber Chemical: Naugatuck Chemical Division, U.S. Rubber Co., is now out with *p,p'*-oxybis (benzene sulfonyl hydrazide), a new chemical blowing agent for the manufacture of rubber and plastic sponge products. A white powder at normal temperatures, the compound decomposes at 135 C liberating nitrogen. The new product can be used with natural and synthetic rubber, many plastics and the new rubber-plastic blends. It's particularly suited to the production of vinyl plastic sponge.

•

Monomer News: American Monomer Corp. (Leominster, Mass.) is swinging into commercial production of two brand new monomers. The neophytes, ethylene glycol dimethacrylate and diallyl maleate, are slated for service in polyesters, rubber chemicals, coatings, drying oils, pharmaceuticals, and as cross-linking agents in copolymers.

•

Fungicide Patent: A patent (U.S. 2,555,024) on the preparation and properties of dodecylpyridinium 2-(5-chlorobenzothiazolyl) sulfide has been issued to R. T. Vanderbilt Co. Effective in concentrations of 0.01% to 0.5% (by weight), the material renders textiles resistant to fungus attack.

•

Anesthetic Probe: Two University of Oregon professors are now hard at work on a study, sponsored by the U.S. Public Health Service, of anesthetic gases. The investigation is taking two forms: Chemist R. B. Dean is engaged in a physico-chemical study of the absorption of the gases on monolayers. Biologist Bradley T. Scheer is probing the relation between the concentration of anesthetic and the effect on nerve tissue.

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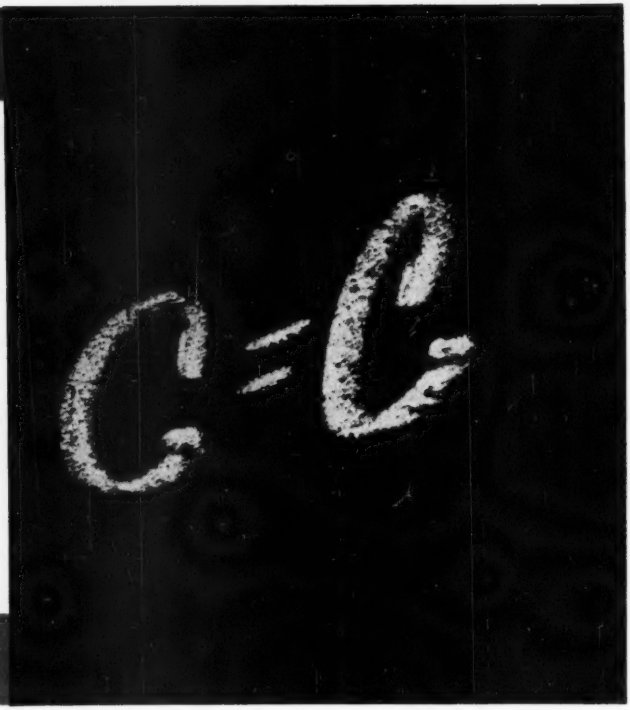

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The possibilities go on – halogenation, sulfation, oxidation, hydrohalogenation, etc. Why not write for further information on these olefins? Put them into your research program – the result may be another profitable new product for you. The Atlantic Refining Company, Chemical Products Section, Dept. B-3, 260 S. Broad Street, Philadelphia 1, Pennsylvania.

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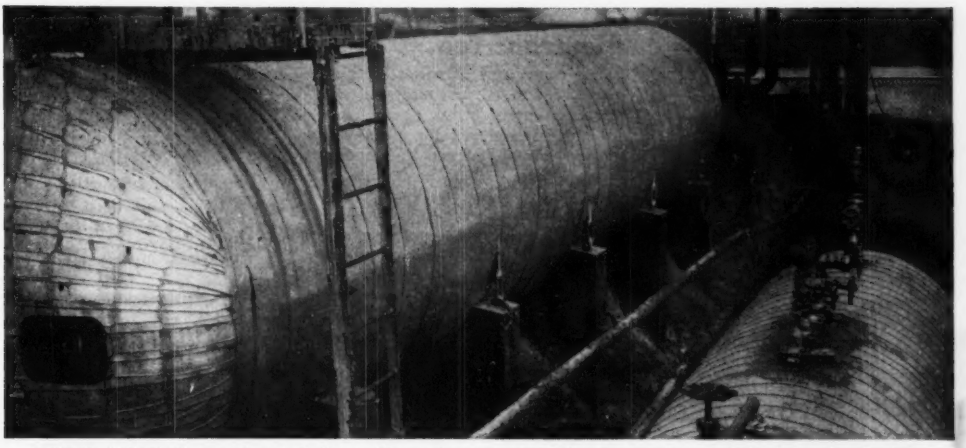


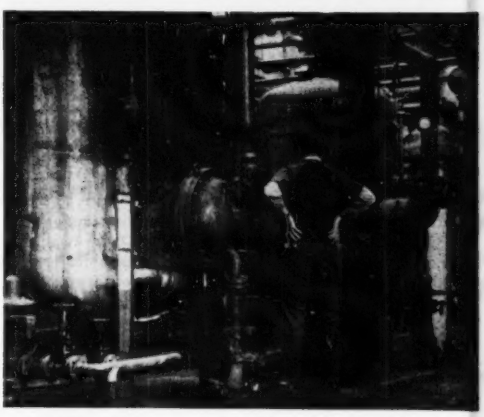
LIQUID AMMONIA (above) and ethylene oxide are the raw materials for the manufacture of the three ethanolamines.

Mono, Di and Tri

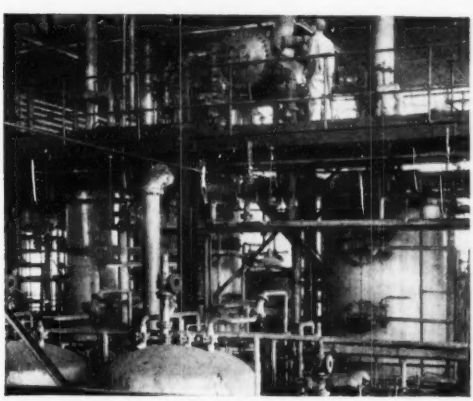
Production capacity for the three ethanolamines for Carbide & Carbon Chemicals Co. is being increased by about 50% at its S. Charleston, W. Va., plant. Now about 75% completed, this new capacity will be added to an industry which utilized about 35 million pounds of the three in 1950.

First produced by Carbide in 1929, the growth in the demand for the three ethanolamines has not been spectacular from the standpoint of total quantity. But triethanolamine has more different end-uses, says Carbide, than any other chemical that the company produces. It is used in practically all shampoos and in corrosion inhibitors, inks, cutting oils, etc.

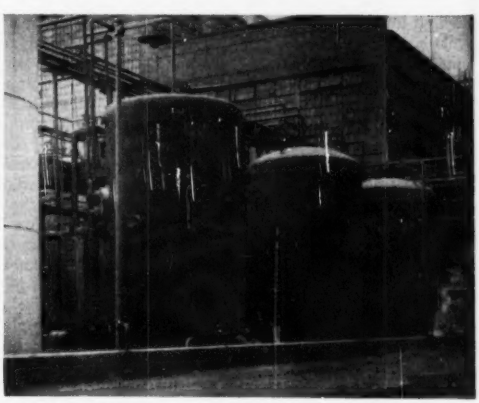
Mono finds its major application in the separation of hydrogen sulfide from sour gases for sulfur recovery. Di's most important use: solubilization of 2,4-D.



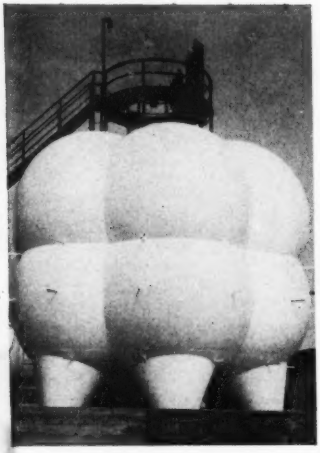
A MIXTURE of mono-, di- and triethanolamine is formed by the reaction of the two raw materials.



IN REFINING the reaction mixture, ammonia is removed by distillation and the products separated.



FROM STORAGE the products move out to a host of uses—from detergents to sulfur recovery.



Super Multisphere

BIGGEST TANK OF ITS KIND in the world was built for Dow Chemical at its Freeport plant by the Chicago Bridge and Iron Co. Used for storing the liquified gases, it has a capacity of 2500 barrels, can withstand internal pressures up to 150 psi. Approximate cost: $80,000.

Conical Holes

Blinding—the tendency for particles small enough to pass through the initial perforation in a screen plate to stick in the interior of the hole and eventually clog the entire screen—is one of the major problems of screening. Now the Pyramid Screen Co. says it has the answer: conical holes.

By constructing a plate in which the perforations are small on the end pointing against the stream of material being pulverized, and considerably larger on the end away from the material flow, all particles which are small enough to pass through the small end will continue on through without blinding. In addition to speeding operation, this feature tends to insure a more uniform product.

Stronger: Since blinding is all but eliminated, the plate can be made two or three times thicker, which means greater strength and rigidity, and longer life.

The company puts out two types of screens with the new conical holes. Both have a wide range of perforation sizes. However, one type has the holes punched, while the other has them electrically etched. The former is made in various metals, while the latter is made only of nickel at the moment. In the etched screen the size and shape of the holes can be controlled down to 350-mesh, giving a plate suitable for exceptionally fine screening.

Ammonia Too

Large centrifugal compressors, used extensively in the chemical industry for the compression of air and gas, are being introduced for use in the compression of ammonia. The first such compressor is now being installed at Monsanto's Nitro, W. Va., plant, is expected to double the capacity of the company's existing reciprocating ammonia system when it goes on stream next year.

The unit, manufactured by Carrier Corp., is of the Carrier Series 18. Long used in the chemical and petroleum industry, it has never before been employed for ammonia compression. In the adaptation, Carrier sees considerably broader use of the compressor.

Low Cost: Monsanto's decision to use the centrifugal type of compressor, says Carrier, is based on its simplicity, and the low operating and maintenance costs. The five stage, 600-hp unit will operate as the low-stage compressor in the Monsanto plant, taking the ammonia gas at 25 lbs. suction pressure and discharging it to the high stage at 75 lbs.

High-Test Sulfur

Construction has just started on the C.I.L. (Canadian Industries Ltd.) plant for producing sulfur dioxide from waste smelter gases (CIW, May, 26). Gas will come from the nickel plant operated by Inco (International Nickel Co.). Economic key to the process: high sulfur dioxide content of the gas from Inco's oxygen flash smelting process.

To be completed in about a year, the plant will be adjacent to Inco's plant at Copper Cliff (Ont.). Its 90,000-ton annual capacity will be equivalent to 45,000 tons of elemental sulfur—a sizable fraction of Canadian requirements. And as an extra boon for sulfur customers, C.I.L. will boost capacity of its Copper Cliff sulfuric plant (also utilizing smelter gases) by 50%.

Coal Cut, Sulfur Bonus: The economic sulfur dioxide plant is made possible by the oxygen plant that C.I.L. built for Inco. It is generally estimated that the latter plant produces about 350 tons per day.

The oxygen in turn is used to roast the pyritic nickel ore that is the source of practically all the nickel produced on this continent. Use of oxygen as a replacement for air entails a big saving in the amount of coal needed for the roasting process.

But more important from the standpoint of sulfur conservation: Gaseous by-products contain 70% sulfur dioxide instead of the normal 1.5 to 8%. That means less cooling and lower pressure are required for liquefaction.

To get 90% of the sulfur dioxide from an offgas containing 6% sulfur dioxide, for example, the operation must be carried out at −95 F under 400 psi. At Copper Cliff, a 75% recovery can be attained—under 120 psi. —in a water-cooled condenser.

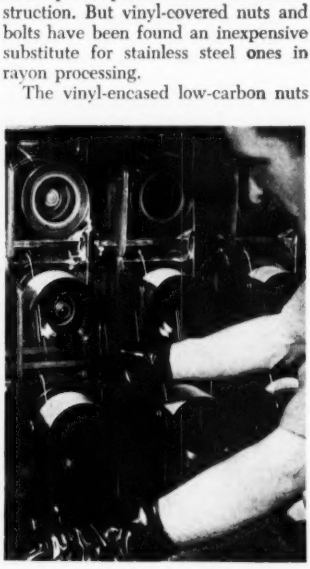
Yields can be increased to 97% by the use of a secondary condenser. In this method, the product separated in the first condenser boils off, is then cooled in the secondary condenser kept at 14 F. At last report, however, C.I.L. preferred to blow the sulfur-containing residual gas into the entrance flue of its sulfuric acid plant. In either case, the sulfur dioxide is 99.9% pure.

The sulfuric acid plant at the site serves another purpose, too. Gases from the smelter are wet with dust and cooling water. Prior to liquifaction, they can be dried by passing them up a tower countercurrent to a stream of 98% sulfuric acid. In the process, the sulfuric acid is downgraded to 93%, but is marketed at that concentration.

Vinyl Savings

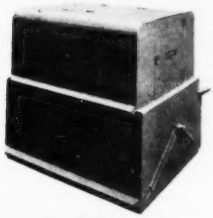
Corrosive chemicals and high temperatures are a combination that usually adds up to expensive materials of construction. But vinyl-covered nuts and bolts have been found an inexpensive substitute for stainless steel ones in rayon processing.

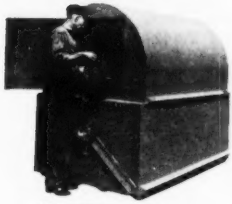
The vinyl-encased low-carbon nuts

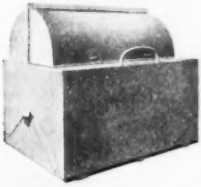


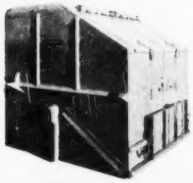
RAYON PROCESS: Nuts and bolts have a coat of vinyl.

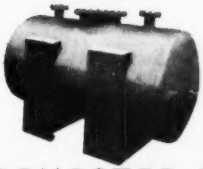
How The Dempster-Dumpster System Cuts Cost of Equipment . . . Eliminates Re-Handling of Materials!











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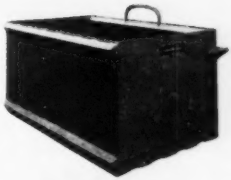

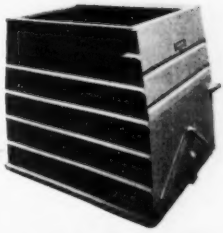

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and bolts have been on test by the Industrial Rayon Corp. (Cleveland) for a year. Experience showed that not only are the coated nuts and bolts cheaper—they cost about 14% of their stainless counterparts—they are doing a better job. Even after the coating has been ruptured by a physical force, chemical attack is confined to the area of rupture.

They are being made by Steere Enterprises (Akron) from a plastisol based on B. F. Goodrich Chemical's Geon paste resin. The vinyl coating is applied by dipping the articles in the resin. No finishing is required unless a flat sealing surface is desired under the head of the bolt.

Now Inorganic

At the upcoming Chemical Industries Exposition in New York, industry men will get their first look at a pilot-size demonstration unit of York-Scheibel solvent extractor. Now two years old, the extractor is finding progressively wider application in the chemical industry.

Latest major application of the unit, which has made liquid-liquid extraction comparable in performance to fractional distillation, is in the field of inorganic processes.

Such operations as recovery of uranium from ore, refining of caustic soda with liquid ammonia, and removal of relatively small amounts of objectionable materials (e.g., phenols) in industrial wastes, are now being carried out by the York-Scheibel equipment.

Problem Solver: Economical solvent extraction on a plant scale has always been a problem to chemical engineers. Many procedures that seemed promising in the lab have proved inefficient and expensive when translated to plant scale.

Distillation, even vacuum distillation, for the recovery and concentration of unstable vitamins and hormones, invariably occurring in complex mixtures, has always been a difficult process. But through fractional liquid extraction, the work is now done efficiently and economically.

Difficulty is encountered in separating the complex mixtures obtained as by-products in synthetic fuel production processes because of the presence of several azeotropes. The new extractor solves this problem by separating the components into groups containing only members of homologous series, after which processing becomes a relatively simple operation.

Generally the York-Scheibel unit finds wide aplication in the separation of close-boiling materials, azeotropic mixtures, non-volatile mixtures, materials from dilute solutions, impurities and color bodies, and other processes where distillation cannot be conveniently employed.

More Stages: The height of an extractor stage is now generally lower than the height of a distillation plate, and the extraction stage efficiency is generally higher than the distillation plate efficiency. Since column height has very little effect on stage efficiency, plant-scale processing is no longer limited to a few stages per unit. Fifty or sixty or more stages to a column have proved practical.

Despite present wide use, the company is still making changes and improvements; one of the latest: rendering the unit explosion-proof.

EQUIPMENT . . . .

Plastic Fans: Westinghouse Electric Corp. is now using reinforced polyester plastics as a replacement for aluminum and bronze in small, totally-enclosed, fan-cooled, ac motors. Westinghouse says the plastic fans are a third lighter than their metallic counterparts, are also more resistant to chemicals and abrasion. They should find application in processes that are carried out in corrosive atmospheres.

•

Gasholder Film: General American Transportation Co. has a new sales gimmick for marketing its Wiggins gasholder. The company has prepared a motion picture demonstrating the gasholder's design and applications, will show it to production and purchasing men throughout the country. Sealed by a neoprene-coated fabric, the gasholder requires no liquid seal. A preview of the film was held in New York last week; it will be shown in other cities, including Chicago, Philadelphia, Akron and Knoxville.

•

Continuous Mill: Patterson Foundry and Machine Co. is now selling its new heavy-duty, continuous ball mill. The mill is suitable for grinding chemical and ceramic raw materials as well as a number of finished products. Advantages claimed: It insures more economical operation by eliminating down-time and reducing maintenance.

•

Load Cells: Automatic Temperature Control Co. is now publishing data on the principles and application of its Atcotran torsion bar load cells and Atcotran cantilever beam load cells. The cells take a mechanical impulse, convert it into an electric signal that can be fed into an indicator.

AEROSOL SNOW: $3 million in specialty makers' Christmas stockings.

White Christmas

You'll be spraying your Christmas tree with aerosol-dispensed "snow" this year.

The new products are just coming off filling lines, but distribution-wise formulators see a 1½-2 million unit sale before Yule fires burn low.

In foot racing, a "rolling start" enables a sprinter to be off with the gun, gives him a big advantage over his competitors. But his timing must be perfect, or else he breaks ahead of the signal and can be disqualified for too many false starts.

Specialty manufacturers seem to be stealing a page out of the racing manual this week. With professional Santa Clauses brushing the moth flakes out of their department store costumes and eager youngsters already on their good behavior, these usually foresighted businessmen are just swinging into full stride on a new specialty that is as seasonal as mistletoe: a pressurized spray for coating Christmas trees, wreaths, windows, etc. with plastic "snow."

The one that broke first and is beginning to pop up on shelves of outlets across the country is Make It Snow, product of a new New York City company called Make It Snow, Inc.* Although the company says that the snow maker is now being sold throughout the country, distribution doesn't seem to be so complete within an area that you can walk into any hardware store, for example, ask for it and ring the bell with the clerk. By the time the Salvation Army lassies have their pots boiling, however, retailers will be pushing Make It Snow and similar products under different labels.

In the Stretch: For the Make It Snow organization will need its rolling start to keep ahead of the specialty makers trying to draw even by December 25. Boyle-Midway, one of the biggest in the household chemical products field, has its Aerosnow clicking off the line now. This company, deep enough in aerosols to have installed its own filling plant (*CW, Aug. 4*), apparently isn't ready to take on the new job itself, is having its product put up by Bridgeport filler Connecticut Chemical Research Corp. With Boyle-Midway's long-established outlets for consumer products of this nature, speedy and complete national distribution should enable it to make up any ground lost in getting into production.

Connecticut Chemical isn't the only filler in the business, of course, nor is Aerosnow the only other product. Fluid Chemical (Newark, N.J.) is turning out Make It Snow; Continental Filling (Danville, Ill.), Spray Magic White Christmas Snow for Frank Paper Products (Detroit) and Sno-Fall for Water Repellents, Inc. (Indianapolis); and Minute Spray (Chicago manufacturer of the Spraint paint line), Santa Snow, its own brand. Another newly-formed Chicago organization, Dyna-Spray, is also doing some filling, and others across the land are either in, or soon will be.

Plastic Crystals: The product that will mean a big, even if short, boom for the industry has been around for several years but no one gave it a tumble until this season. Formulations were worked out by General Chemical as a market for Genetron 102-J propellent, considered by aerosol makers to be a top propellent-solvent. Genetron is quite tight now, so Freon propellent combinations have been developed as alternates to meet the sudden sharp demand.

This has called for a new aerosol technique of adding ingredients that are not a true solution. Plastic granules (isobutyl methacrylate) are added to the can, then the solvent. The material goes into solution within about 24 hours. Just enough solvent-propellent (Freon has a dual function here) is added to bring the plastic into solution so that the resultant spray is not too wet and sticky, if the Christmas tree mark is missed. Putting the plastic in as a solution gives a wet spray—and an unsalable product.

So far only Crown cans and Precision Valve (Yonkers, N.Y.) valves, which are free from objectional plugging with this product, are being used. Dyna-Spray, however, says it has developed with a manufacturer a non-clog spray head that works on "snow" and paint. But it is using Precision's valves until it gets into production.

Profitable Coating: The products are coming out in 6-oz. and 12-oz. cans priced competitively at 98¢ and $1.95, respectively. The large can will coat a 10-12 ft. tree with simulated snow crystals; the small one, a 5-6 ft. tree. Both can be used for window displays and the like. The coating is easily washed off with a damp cloth.

Market reaction at this early date is described as "terrific" even by seasoned merchandisers. The product needs no selling; it's an order-taking proposition, with the smaller can the faster mover. A potential market of two million units is considered conservative, but availability of Freon propellent will probably put a ceiling

* Avowed to be an independent company, but Noma Electric Corp. (Christmas tree lights) has at least a well-wisher's interest in its success.

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• ETHYLENE GLYCOL
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on producers' hopes. At least one and a half, and possibly two million units will be made. That's a neat $3 million worth of business specialty makers weren't even dreaming of last summer.

Rx Reshuffle

The hotly-debated prescription drug bill became law last week. While it is still ambiguous on a few points, according to drug manufacturers, they breathed a sigh of relief that it did not give Oscar Ewing, his Federal Security Agency or its offspring, the Food and Drug Administration, wide powers in determining what is and is not a prescription drug.

Instead, after the battle had subsided, the determination on which drugs should be restricted was left very much the same. The FDA still has the power to state informally what drugs it considers suitable for unrestricted sale, but as in the past, these rulings will not have the force of law.

Final determination was left with the manufacturers, and any dispute over whether a drug should or should not be freely sold can be taken into the courts.

Before it was amended, the bill would have allowed government agencies to issue a yes-or-no ruling on salability, which could only be reviewed by the court in a limited sense. Such a review could be made under the "substantial evidence" rule, where reversal is possible only when the agency has flagrantly abused its classification authority.

Under a benevolent administrator, this might work, but such benevolency can't always be assumed. As the law finally was passed, however, worries over administrative decisions were mightily lessened. In addition, any court case would include a review of all the evidence, not just parts of it.

Basic Provisions: Main thing the bill does is to write into law many of the administrative rulings of the FDA. As a part of this, it helps eliminate a twilight zone for druggists who have had a hard time deciding what or wasn't a prescription drug.

Individual manufacturers have put out varied recommendations for the sale of the same chemical. Precipitated chalk, strychnine sulfate (in 1/60th grain quantities), ammonium chloride and dehydrocholic acid have been cited as examples where labeling by different manufacturers allowed both over-the-counter and prescription sale. Technical clarification on this point can be expected.

The bill allows a doctor to telephone an order for any restricted drug other than a narcotic (though the pharmacist must write down and file the order).

Refilling of drug orders is also clarified, since the bill states that prescriptions for restricted drugs cannot be refilled. There have been widespread abuses on sale of such drugs as barbiturates and Benzedrine notwithstanding an administrative ruling under present laws that prescriptions could not be refilled.

Physicians' orders for drugs where over-the-counter sales are permitted are not affected. The previous ruling made no distinction on prescriptions for restricted and non-restricted drugs—neither could be refilled legally.

Switching Time: The bill is effective six months after signing, which gives manufacturers until April 26, 1952, to change labeling on prescription drugs to the new wordage: "Caution, Federal law prohibits dispensing without prescription." It is assumed that the FSA will release its list of prescription-only chemicals soon. If a listing is disputed, manufacturers can request a hearing.

The law isn't specific about (1) stocks now on the shelves, or (2) labels already on hand which will last for more than six months. Lawyers in the field generally feel that any violations here probably would be considered technical—not criminal—since in the past Federal officials have been lenient on changeovers necessitated by new laws. However, they warn that changes should be made as soon as feasible.

Set for Selling

Marketing prospects for heptachlor, the new Velsicol insecticide, are bright as commercial production starts this month at Arvey Corp.'s Memphis plant. Reason: There's a good chance USDA will give direct label approval for its use on grasshoppers and cotton boll weevils.

Arvey, of which Velsicol is a wholly-owned subsidiary, is spending $2 million in expanding its plant to produce heptachlor *(CI, Nov. 1950)*. The plant, a caustic-chlorine installation bought from Heyden Chemical last year, will have double its present capacity of these commodities. Heptachlor will require much of this, but it will not take the entire output.

Initially the new insecticide will be produced on a limited scale, so production for 1951 probably will not be much more than 2 million lbs. Ultimate Memphis production goal (the

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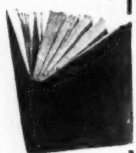

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expansion is expected to be completed by the latter part of 1952) will be a million lbs. a month, however.

Heptachlor seems to be headed for the same markets as chlordane, the first synthetic organic insecticide to come out of the Velsicol laboratories. Tentative clearance on commercial use of the product is still pending, but the company expects to have label approval for its use against boll weevils and grasshoppers. Applications against the wireworm and corn borer, on which results to date have been very promising, may still be limited to an experimental basis.

Velsicol will handle distribution to insecticide makers who formulate into finished products.

Graphic Chemicals

New chemical approach to lithography will put Minnesota Mining & Manufacturing Co.'s foot in the door of the graphic arts field. First two products are a heat-sensitive duplicating paper and a sensitized all-aluminum photo-offset plate.

Test marketing of both products is in the early stages but results so far indicate they may soon make a bigger splash in the lithographic market. Novel twist is the fact that promotional material is being printed with the plate it boosts.

The heat-sensitive paper, **Thermofax**, is of sandwich construction. Backing is a layer of black material; filling, an opaque white chemical composition; and face, a transparent protective layer.

In use, the paper is placed over the original, black side down. Infrared heat passing through the back of the original is transmitted best by its black areas to the black backing of the copying paper. It causes the opaque filling to melt, but on resolidifying the filling is transparent—forming windows through which the black backing is visible and reproducing the original.

According to the manufacturer, the filler material is not a wax, but it is characterized as "wax-like" and the shift from opacity to transparency is described as being akin to crystalline reorientation. No development with gases or liquids is necessary, the copy is finished in a single step.

The sensitized paper sells for 5¢ a sheet, is recommended for jobs requiring 1-10 copies. The copying machine with which it is used costs $525. Test marketings have been made only in Chicago, Washington and New York thus far, but the paper is apparently slated for wider distribution in the near future.

Hydrophobic Fix: The photo-offset plate is a .005" sheet of aluminum coated with an ultraviolet-sensitive emulsion. Placed in an exposure frame, negative on top, it is exposed to a UV light source. Normally water-receptive, the emulsion becomes water-repellent where light strikes it.

After exposure the surface is treated with a gum arabic solution and then with a resinous red developer. When the image becomes visible, all excess solutions are washed off with water.

In the press, water wets the rest of the plate, but shies away from the water-repellent areas, leaving them free to pick up greasy ink. The plate will take halftones of 300 lines, print 20-30,000 high quality copies in colors as well as black and white. It is faster, more accurate than other plates; costs only 50¢ as compared with their $4-5.

Seventy photo-offset and duplicating supply dealers across the country have the plates now, but distribution will soon be increased.

These two products are apparently only a start for 3M in the graphic arts field. Several other new products are under wraps, but headed for commercialization soon.

•

Antihistamine Cough Syrup: Timely launching of a new cough syrup will meet the coming cold season head-on. Abbott Laboratories (North Chicago, Ill.) has combined an antihistaminic agent with a benzoinated syrup for child and adult use.

The syrup is recommended for certain allergic coughs and infections as well as colds. Although exempt from narcotic order, a registration number is required.

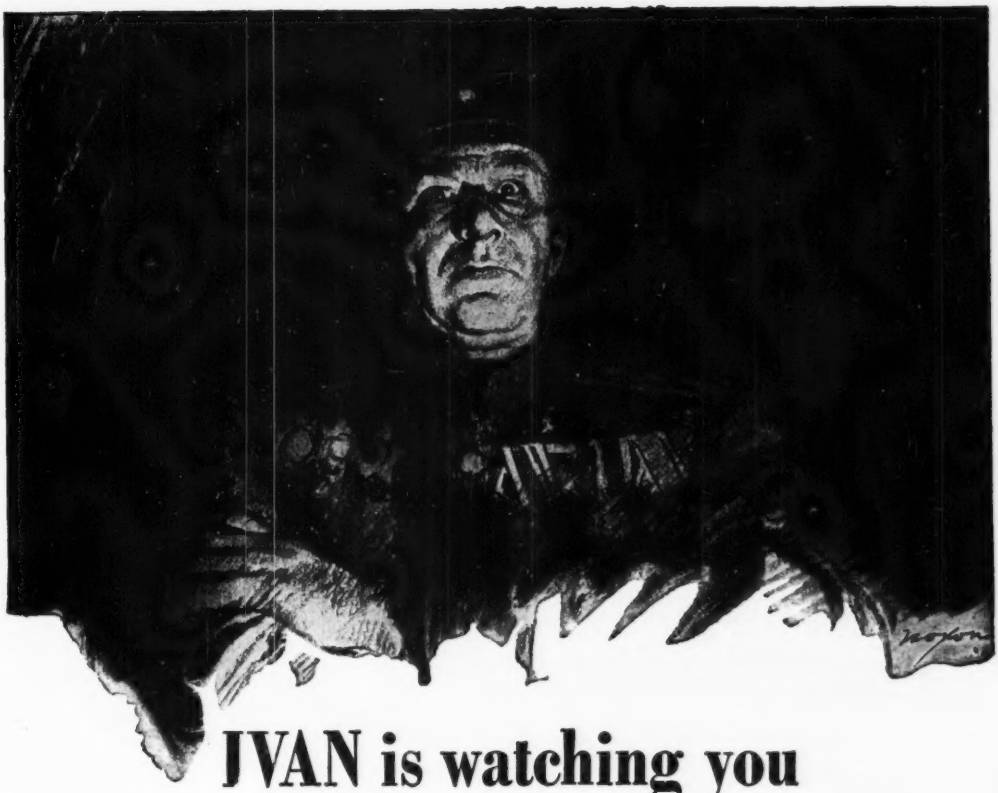
The antihistamine used is thenylene fumarate (methapyrilene fumarate) at a concentration of 90 mg. per fl. oz. Other ingredients contributing sedative and expectorant qualities are codiene phosphate, sodium citrate, ammonium chloride, ipecac syrup, menthol and aromatics. Base of the mixture is a benzoinated syrup.

•

Fruit Fungicide: A stearic acid derivative, 2-heptadecyl glyoxalidine, has been developed by Carbide and Carbon Chemicals Co. for use in a new fungicide, Crag 341. It protects against apple scab, also discourages red mite infestation. It adheres well, giving protection even after heavy rains.

•

Vitamin Formulation: Winthrop-Stearns has introduced a new, inject-



IVAN is watching you

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Ivan is working hard to beat you down. He has a big head start.

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SPECIALTIES . . . .

able B complex preparation, Betasynplex with Vitamin B_{12}, for patients who fail to respond to oral administration of similar materials.

•

Distribution Point: Perkins Glue Co., of Lansdale, Pa., has established Shawano, Wis., facilities for distibution of resin glue, casein and vegetable adhesives.

•

New Soap Use: Soapsuds are the Naval Research Laboratory's new carrier for abrasives used in optical polishing. Garnet and aluminum oxide powders are carried by the foam during different parts of the processing.

•

Inhibiting Primer: Prufcoat Laboratories of Cambridge, Mass., has marketed Prufcoat Primer P-50, for use as a rust-inhibiting quick-drying primer for metal surfaces. Conventional paints and active-solvent paints can be used as a finishing coating.

•

Expansion Planned: U.S. Sanitary Specialties Corp. is planning an expanded sales program in Texas and surrounding states. The company will lease a new warehouse to add to its present distribution facilities located in Dallas.

•

Aerosol Burn Spray: An aerosol-dispensed topical anesthetic for burn relief has been introduced by Americaine, Inc., Evanston, Ill. The Americaine Aerosol uses benzocaine as anesthetic and oxyquinoline benzoate as antiseptic.

•

New England Office: Plaskon Division of Libbey-Owens-Ford has established a Boston sales office for industrial resins. Sales area includes territories in New England, New York and eastern Pennsylvania.

•

Specialties Sales: Chemicals, Inc., has been formed in Milwaukee, for the purpose of jobbing cleaning, renovatting, washing and deodorizing chemicals.

•

Expanded Facilities: Houghton Laboratories has expanded production of plastisols and organosols at its Olean, N.Y., and Smithport, Pa., plants. The compounds are marketed under the trade name Hysol.

PICTURES IN THIS ISSUE:

Cover (bottom)—Hans Basken, McGraw-Hill; p. 14—Natl. Defense Advisory Commission; p. 15 (3)—Jack Jenkins Photo; p. 24—Wide World Photo; p. 32—Mike O'Connell.

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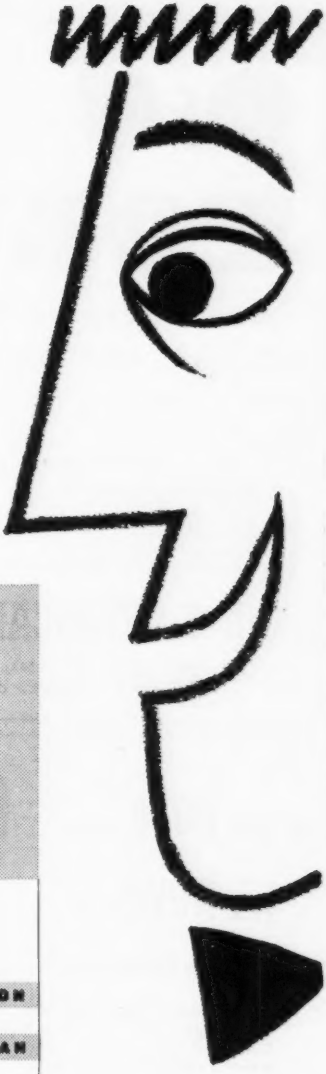

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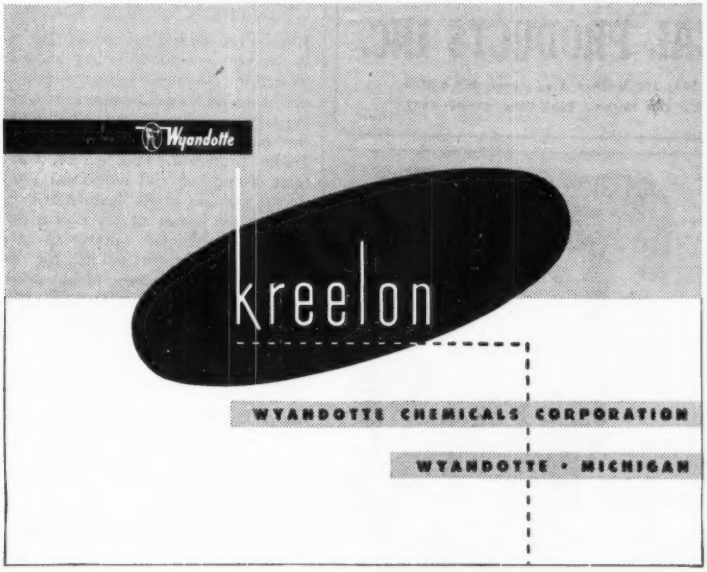

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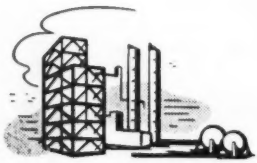

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F-128

McGRAW-HILL PUBLICATIONS

BOOKS.....

Quantitative Organic Microanalysis, by Al Steyermark. The Blakiston Co., New York, N.Y.; xvi+389 pp., $7.

Intended for use as a reference text for industrial and research chemists as well as students, this monograph outlines the theory and practical applications of microchemical analysis. Detailed discussions cover recommendations for setting up and equipping a microchemical laboratory, step-by-step procedures, and directions for performing determinations—including both standard analyses and those developed by the author. Necessary apparatus is illustrated and explained as to use, construction, maintenance and procedures to be followed in handling. Bibliographies appear at the end of each chapter.

McGraw-Hill Directory of Chemicals and Producers, 1952, second edition, edited by T. L. Bonnitt. McGraw-Hill Publishing Co., Inc., New York, N.Y.; 626 pp., $20.

Here is the second revised edition of the index devoted to listing for the American chemical industry prime producers and manufacturers, including refiners and processors, along with the chemicals they make and the grades produced. This edition contains listings of 150 additional producers and has a new feature in that it notes the names of key executives and the approximate number of employees. Like the first edition, the directory presents listings of chemical raw materials, industrial and fine chemicals, dyestuffs and certain semi-finished products.

MEETINGS..

Amer. Council of Coml. Labs., Baker Hotel, Dallas, Tex., November 15-16.

Chemical Industries Exposition, Grand Central Palace, New York, N.Y., November 26-December 1.

Chem. Specialties Mfrs. Assn., annual meeting, Mayflower Hotel, Washington, D.C., December 2-4.

Amer. Inst. of Chem. Engrs., annual meeting, Chalfonte-Haddon Hall, Atlantic City, N.J., December 3-5.

Natl. Assn. of Mfrs., annual meeting, Waldorf-Astoria Hotel, New York, N.Y., December 5-7.

Proprietary Assn., Scientific Section, Biltmore Hotel, New York, N.Y., December 7.

Soc. of Cosmetic Chemists, annual meeting, Biltmore Hotel, December 6.

Synthetic Organic Chem. Mfrs. Assn., annual meeting, Commodore Hotel, New York, N.Y., December 11.

Compressed Air & Gas Inst., The Drake, Chicago, Ill., December 11-12.

POLYESTER RESINS..... *Dr. Earle Ebers*

Ever since Dr. Earle Ebers delivered his comprehensive paper on polyesters at the National Technical Conference of the Society of Plastics Engineers earlier this year, wide interest in his report has been expressed.

For this reason, Naugatuck here reprints highlights of that report. As many of you know, Dr. Ebers and his Naugatuck associates are among the polyester pioneers who have contributed to the phenomenal growth of this remarkable resin.

If you wish the full text, the coupon below will bring it to you, along with the other data specified.

In 1942, polyesters, as we now generally know them, were born and a new class of thermosetting resins of the following properties was available:

• Good aging • 100% reactivity • Rapid curing without porosity • Wide viscosity range • Good chemical resistance • Good electrical properties • Good abrasion resistance • Wide color range • Good temperature shock resistance from −80° F. to 212° F.

In combination with fibrous fillers such as nylon, cotton, sisal, rayon, paper and, in particular, glass, polyesters have the above properties plus:

• High specific tensile and flexural strength
• High impact resistance

WAR USES: The handling properties of low viscosity, 100% reactivity and rapid curing without porosity under no or a minimum pressure permitted that American production ideal of continuous operation in the lamination of glass cloth. Large quantities of sheet stock of this nature were made. These were used as support panels for self-sealing gasoline tanks in aircraft.

More complex aircraft structures such as air scoops, water and de-icer tanks, wheel farings and ducts quickly followed as experience with these versatile polyester resins grew because they gave:

• Weight savings • Elimination of costly tooling • Man and machine hour savings • Versatility

The excellent physical and dielectric characteristic of these laminates were utilized in radomes.

WAR DEVELOPMENTS: Experimentation on structural sections such as the BT-15 airplane fuselage by the AAF Material Command, Wright Field, clearly demonstrated that polyester fibre glass laminates compared to metals and, in particular, 24 ST aluminum have:

• Higher specific strengths • Greater damping capacity • Better thermal insulating properties • Better acoustical insulating properties • Possible fabrication advantages in time savings and simplified structures • Greater adaptability to variable gauge sections

These advantages were further borne out when the constructions of the Sikorsky Aircraft B-6 Helicopter cabin was changed from metal to plastic with:

• Over 10% saving in weight • Greatly reduced noise level • A reduction in parts to assemble from several hundred to only 26 • Approximately a 50% reduction in production time

Simple boat structures were a "natural" and appeared early on the scene.

A great developmental saga had been written and enthusiasm was rampant for the post-war possibilities of this Cinderella when the war came to a close and the fairy godmother was gone.

Polyester resin sales rose from perhaps 1,500,000 pounds in 1946 to 7-8,000,000 pounds in 1950 and these resins were used in the following amazing variety of products.

CONTINUOUS LAMINATIONS: This was probably the first and simplest conversion: Two polyester-bonded glass cloth products finding peacetime usage as cargo liner and photo template. Immediate introduction of a paper laminate into the wall board and decorative table top field also helped to absorb some of the capacity of these machines.

CAST SHEET AND TUBING: Abrasion resistance and good optical clarity are utilized for glazings, while the excellent electrical characteristics of these resins lead to parts for electronic and radar equipment. Further, they replace more expensive amber in x-ray equipment.

FISHING RODS: By applying the very high strength-to-weight ratio of polyester-bonded parallel glass fibres to rod-making, in analogy with the natural bamboo product, this new fisherman's delight was born.

BOATS: This application was a logical extension of the armed services' experimentation in this field. With new techniques, commercial boats of more versatile design are being built with 45 to 90% savings in manhours. Other plusses are lighter weight, salt water resistance, imperviousness to rot and worms, no annual caulking and high impact resistance.

LUGGAGE AND CARRYING CASES: The abrasion resistance, high strength properties, light weight and integral color lend themselves to attractive carrying cases for musical instruments and luggage.

AUTOMOTIVE: Lightweight, ease, and economy of repairs are the main advantages. Competitive costs have only been obtained to date in cases such as trailer fenders and electric cruising car bodies where the total of pieces required was small.

SEALANT FOR POROUS CASTINGS: Excellent against petroleum products and thermal shock.

LAMP SHADES: High light transmission permits lower wattage bulbs. Easy cleaning, strength and resistance to heat and moisture are other features.

OUTDOOR SIGNS: Good weathering, toughness, lightweight and integral color contribute to low maintenance costs.

STREET LAMP GLOBES AND REFLECTORS: Toughness towards sharp stones, good light reflectance, and good weather resistance make this a highly practical application.

TRUMPET MUTES: This is a typical example of the hollow articles which might be made in a single piece, having no joints to develop weakness under continuous vibration.

PROJECT TOOLS: Polyester glass laminate project tools in the aircraft industry give large time and money savings over metal tools and do a better job. They are less liable to distortion and damage in service.

LARGE PIECES: That size is no limitation to polyester glass laminate structures is evidenced by the 650-pound synchroton piece and the 700-pound Westinghouse photometer sphere made from them. High strength, good dimensional stability, excellent electrical properties and weight savings are additional features.

MOLDINGS: The fast curing of polyesters has given molding compounds for the electrical industry—with very high tracking resistance and 30-90% greater productivity. Other special formulations give rapid production of television antenna holders and tough, colorful battery boxes.

FUTURE OF POLYESTERS:
Now comparative to the technology of woods and some metals, the chemist and engineer have hardly turned the first pages in their thinking on polyesters and polyester fibre combinations. If, as established in the 1946-1950 period, these are already competitive in many cases, can there be doubt as to their future potentialities?

Structures from buttons to atom smashers, flat sheet to B-29 duct work, and work trays to radomes, attest to the handling and physical properties and versatility of these materials.

In conclusion, it is suggested that application of your creative imagination and ingenuity to these materials will yield high rewards similar to those attained by the dreamers of 1944 and 1945, a large percentage of whose ideas are now commercial realities.

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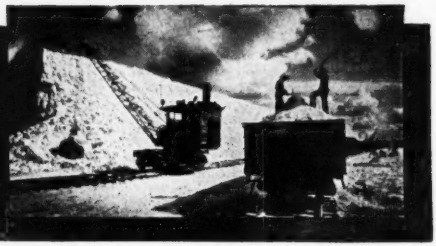

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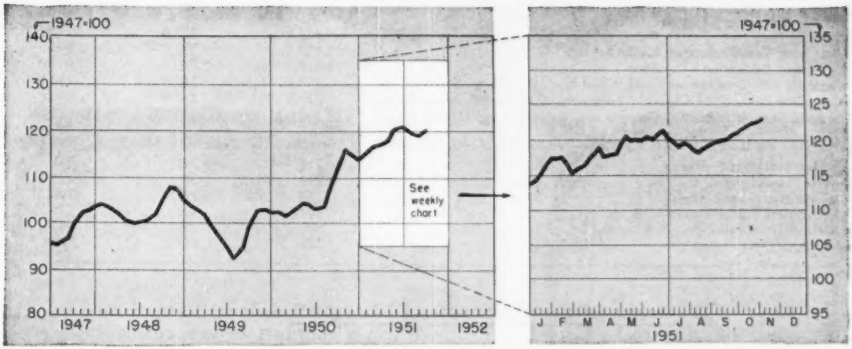


CW Index of Chemical Output—Basis: Total Man-Hours Worked in Selected Chemical Industries

Chemical producers are taking a more serious view of the New York dock walkout, now in its third week. Imports are held up, while exports pile up. And the problem is aggravated (1) by inventory limitations imposed on many scarce materials by NPA. (2) In many cases, rerouting of chemicals via other ports is not economically feasible.

Currently, producers and shippers around New York and Boston are most worried because they are hardest hit. But other geographical quarters are increasingly concerned about the possibility of material shortages, the prospect of the strike spreading.

This should be a big enough worry for any one week. But chemical purchasers have another poser to solve. Quite a few producers are now pricing under manufacturer's regulation CPR-22, instead of the prior ceilings of GCPR. Reason: up-creeping costs.

Slightly higher prices for most chemicals will be the result of this trend. A smaller number will be lower, since this price switch applies to all chemical products of a company or division. Now buyers will have to shop around for bargain prices, because the same chemical could have a number of price tags depending on the source.

These price differentials will, of course, be maintained for chemicals in short supply. But as availability continues to improve for most of these items, the high-man will eventually have to meet the low-man's price.

Here is more proof for those who don't know how tight phthalic anhydride really is. Two companies will buy distillation residuum to "squeeze out" previously unrecovered phthalic.

One of them, Dewey & Almy of Acton, Mass., will utliize a 60% material to make 4 million pounds of dioctyl phthalate and 1 million pounds of dibutyl phthalate annually.

The other, newly-formed By-Products Processing Laboratories, will treat a 20% pitch to make the anhydride (some 7 thousand pounds weekly) in Hackensack, New Jersey.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	123.1	123.0	116.2
Bituminous Coal Production (Daily Average, 1000 Tons)	1,923.0	1,893.0	1,954.0
Steel Ingot Production (Thousand Tons)	2,019.0	2,089.0	1,987.0
Wholesale Prices—Chemicals and Allied Products (1926=100)	140.7	141.8	133.2
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	230.6	232.4	190.0
Chemical Process Industries Construction Awards (Eng. News-Record)	$32,748,000	$10,553,000	$12,656,000
MONTHLY BUSINESS INDICATORS—Production (1935=100)	**Latest Month**	**Preceding Month**	**Year Ago**
All Manufacturing & Mining	219	217	211
Durable Manufactures	273	268	251
Non-Durable Manufactures	192	193	194
All Chemical Products	307	307	271
Industrial Chemicals	568	559	465
By-Product Coke	179	177	170

The ranks of synthetic water-soluble gums will be thinned by one after this week. Tennessee Eastman has withdrawn sodium cellulose sulfate from further market development. Reason: a combination of raw material shortages and other, more urgent uses for the processing equipment.

Except for a few random supply pinches purchasers of chemicals will usually find the selections are better and the waits are shorter. For instance, ethylene oxide, process predecessor to ethylene glycol, is more abundant than in over a year. The particular easing, however, is somewhat temporary, coming at the end of the antifreeze pack.

Salesmen of caustic are waxing more persuasive. High output, coupled with a textile slowdown and a so-so soap business, makes the average non-contract buyer adopt a show-me attitude.

More phenol and resorcinol, both benzene offspring, can be expected in 1952. Signs are evident of a balance between supply and demand for resorcinol, even before Borden's new West Coast plant comes in.

The first synthetic phenol plant on the West Coast will be built by Standard of California . Output of the $4 million plant will be marketed by Oronite Chemical Co., Standard subsidiary, and will be eagerly awaited for molded plastics and plywood adhesives.

Agricultural chemicals will share in the rosier supply outlook, according to Carl Heisig of the USDA. Production of pesticides DDT and BHC is ample, following substantial increases in the past year. Only lead arsenate and (of course) sulfur will be inadequate for all needs. Prices should continue around current 1952 levels.

Two of the three major fertilizer components will be more plentiful, the other less so. Nitrogen and potash will be about 25% better; but phosphates, for lack of sulfuric, will fall short of last year by 8%.

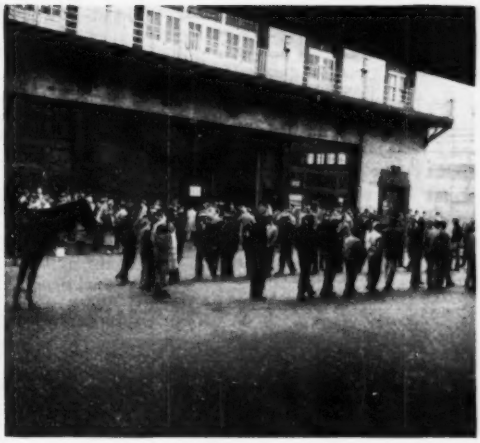
Economy-minded buyers of industrial coatings are keeping a close watch on price reductions in silicone-alkyd resin formulations. Latest development: Plaskon Division of Libbey-Owens-Ford slashed prices from 14-38%. Equally important, further reductions are slated in a drive to pre-empt a bigger share of the surface coatings market.

SELECTED CHEMICAL MARKET CHANGES—Week Ending November 5, 1951

UP

	Charge	New Price		Charge	New Price
Carbon Tetrachloride, cwt., tech.	$ .60	$8.60	Phthalic Anhydride, c.l., bags	$ .02	$ .22
Phenol, 90-92%, c.l., drums	.02	.185	Sodium Nitrate, dom., bulk ton	2.50	47.50

All prices per lb. unless quantity is stated.



NEW YORK DOCKS: Idle ships, rival factions, stalled chemicals.

Dock Snarl Hits Chemicals

Stevedore tieup in the New York area is still unsettled; effects have already hit the chemical industry.

Defense program is pinched by lack of imported naphthalene for phthalic anhydride. Export casualties include caustic and fertilizers.

Producers and shippers are relying on improvised methods to meet this transport problem, hope for early mediation.

Even if the New York-Boston dock walkouts are settled today, the chemical industry is not apt to forget it in a hurry. Shortages of needed imports will slow many a defense production schedule, and these will make others bog down later. At the same time, damming up of normal exports could lead to a glut on the U.S. market.

If the jurisdictional dispute is not solved in short order, other ports may be tied up too. And each day the impact of the idled shipping moves from the irksome to the serious.

Still Local Yet: Though many producers and shippers have not been hard hit yet, they are worried plenty. All of them are confronted with twin problems: estimating how their operations will be affected by a longer strike, and what to do about it. Unfortunately, many chemicals can't stand the added cost of transshipment via other routes.

Importers and exporters, most of them concentrated in the New York area, are feeling the effects strongest, since foreign trade is their bread and butter. But many chemical producers also have a large stake in the outcome. Quite a few do a sizable export business, or they need imported chemicals.

Eyed Closer: Probably the most acute import shortage is in naphthalene, needed for phthalic anhydride manufacture. Prices of the imported naphthalene are so high already (some 15¢ a pound) that rerouting is just not feasible.

Not all U.S. chemical producers who sell at export have equally knotty problems. For instance, medicinals and pharmaceuticals are relatively valuable, can absorb somewhat higher freight. Some producers are shipping via other ports, and an increasing number are relying on air transport.

But low-cost chemicals like mixed fertilizers and caustic soda can't afford the extra freight. One major fertilizer compounder in the New York area is sitting tight on a large shipment to South America, sold on a letter of credit expiring November 15. Caustic soda producers in New York and New England territory are now at an economic disadvantage compared to their counterparts on the Gulf Coast in vying for the South American export market. And with the slump in textile business at home, caustic supply in that area may soon outrun demand.

Outlook: It is no paradox, then, that some chemicals will get scarcer and some too plentiful if the walkout continues or spreads. Mediation of the dispute by state or Federal agencies is likely; such a step is sure to win the whole-hearted blessing of the chemical industry.

'Strategic' Dye Aid

Sodium hydrosulfite, which finds its primary use in vat dyeing, last week looked as if it might go onto the strategic chemical list, barring its sale to Iron Curtain countries.

Shipments of the compound, routed through Rotterdam and Hong Kong, reportedly have been finding use in Communist China as an ingredient in incendiary bombs.

Upon receiving this report, the Office of International Trade asked the Department of Defense whether use in bombs was possible. If defense officials report that it can be used in incendiaries, OIT will bar shipments to communist spheres.

Hydrosulfite makers can't see how their product would be profitably utilized in bomb making. Hydrosulfite, a strong reducer, finds its major use in reducing vat dyes to a soluble state for application to textiles. After application, the dyes are oxidized to an insoluble state, giving the cloth its permanent color.

Whether the compound can find use in incendiaries is a question to which only the Chinese can give a definite answer. Two possible means have been mentioned by manufacturers here: (1) It could be mixed with an oxidizing agent to give an exothermic, heat-producing reaction. (2) As a not-too-stable compound, it could be heat-

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ed to start its decomposition, which is then self-sustaining. This reaction is inefficient, would not find use in this country. However, lack of normal thermite components might mean that the Chinese would resort to hydrosulfite.

Export Availability: Significant amounts of the compound have been available for export since the textile doldrums in this country have lessened normal demands.

When textile demands were high, supplies of hydrosulfite were tight. Limiting factor on production has been zinc dust. (Reaction: zinc plus sulfur dioxide to zinc hydrosulfite,* from which the sodium salt is made.)

The three major producers of the hydrosulfites, DuPont, Rohm & Haas, and Virginia Smelting, and two smaller ones, Royce Chemical and Jacques Wolf, wouldn't be too greatly affected by any change in the export status of the product—normally they can sell all they produce to U.S. customers.

The present surplus of hydrosulfite is a temporary one—the commodity will be on the short side again, once steady textile production is resumed.

* Used unchanged as a whitener for ground wood pulp.

GOVERNMENT NEEDS

Bid Closing	Invitation No.	Quantity	Item
Commanding General, New York Quartermaster Procurement Agency, 111 East 16th Street, New York, N.Y.:			
Nov. 19	52-419B	833800 lb	Sour, laundry
Phila. District Corps of Engineers, 121 N. Broad St., Philadelphia., Pa.:			
Nov. 12	(Eng-36-109-52-73)	16010	Gas, carbon dioxide, Matheson or equal
Nov. 12	(Eng-36-109-52-72-B)	1000	Fire extinguisher, liquid, carbon tetrachloride base—50 gal drm.
Chief, Procurement Division, Supply Service, Veterans Administration, Washington 25, D.C.:			
Attn: C. C. Hoskinson, Phone Executive 4120, Ext: 3212:			
Nov. 13	S-115	143640 lb	Starch, laundry
	S-116	649100 lb	Sodium metasilicate pentahydrate
	S-112	147800 lb	Soda ash
Nov. 12	A-30	576 bx	Sodium ascorbate injection
		312 btl	Polyethylene glycol
		60 btl	Mercury
		192 cn-str	Magnesium oxide, heavy
		240 btl	Potassium bicarbonate
		384 btl	Silver nitrate crystals
		1824 btl	Sodium hydroxide
		384 btl	Sodium nitroferrocyanide
		264 btl	Terpin hydrate
Chemical Corps., U.S. Army, New York Chemical Procurement District, 111 East 16th Street, New York 3, N.Y.:			
Open	CML-30-070-52-19	220,000 lbs	Potassium chlorate
Open	CML-30-070-52-20	25,000 lbs	Potassium ferrocyanide

GOVERNMENT AWARDS

Item	Supplier	Location
Armed Services Petroleum Purchasing Agency, Washington 25, D.C.:		
Compound, corrosion preventative	Pennsylvania Refining Co.	Butler, Pa.
Compound, greases and oils	Southwest Grease & Oil Co.	Wichita, Kan.
Compound, corrosion preventative	E. F. Houghton & Co.	Philadelphia, Pa.
Re-refined oil	Hal-Mac Refining Co.	Tyler, Texas
Armed Services Medical Procurement Agency, 84 Sands St., Brooklyn 1, New York:		
Chloroquine phosphate tablets	Winthrop-Stearns Inc.	New York, N.Y.
Dextrose injection dextrose & sodium injection	Cutter Labs.	New York, N.Y.
Chlorophyll, ointment	Tystan Co., Inc.	Mount Vernon, N. Y.
Iodopyracet, injection	Winthrop-Stearns, Inc.	New York, N.Y.
Hexavitamin tablets	Strong Cobb & Co., Inc.	Cleveland, Ohio
Amyl alcohol, ether	Mallinckrodt Chemical Works	St. Louis, Mo.
Chloramphenicol	Parke Davis & Co.	Detroit, Mich.
Hydrochloride capsule	Lederele Labs.	New York, N.Y.
Aureomycin, hydrochloride capsule	Lederele Labs. Amer Cyanamid	New York, N.Y.
Navy Purchasing Office, New York, N.Y.:		
Insecticide		
Tape, adhesive	Hampton Mfg. Co.	New Rochelle, N.Y
Trichloroethylene	E. I. DuPont de Nemours & Co.	Wilmington, Dela.
Chemical Corps, U.S. Army, New York Chemical Porcurement District, 111 East 16th St., New York, N.Y.:		
Zinc Oxide gr. 2, Class A	Eagle-Picher Sales Co.	Cincinnati 1, Ohio
New York Quartermaster Procurement Agency, 111 East 16th Street, New York 3, N.Y.:		
Duck, cotton, OD-7 16 oz., vinyl coated, FMT, 61"	Denemark & Morris, Inc.	New York, N.Y.
Trisodium phosphate, technical 1 lb. cont.	The Clarkson Lab. Inc.	Philadelphia, Pa.
Trisodium phosphate, technical, 1 lb. cont.	Dek Products Inc.	Baltimore, Md.
Trisodium phosphate, technical, 1 lb. cont.	The Climalene Co.	Canton, Ohio
Trisodium phosphate, technical, 50 lb., bags.	General Chem. Div. Allied Chem. & Dye Corp.	New York, N.Y.

POSITION VACANT

FRICTION MATERIALS Chemist or engineer, also press room foreman or superintendent. Must have experience on thermo-setting resin clutch facings and brake lining. Write full experience and salary desired. Standco Brake Lining Company, 2701-2801 Clinton Drive, Houston, Texas, P.O. box 93.

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WANTED: MANUFACTURERS Representatives to sell Polyethylene Drum Liners. Exclusive territory—liberal commissions. Write: Better Bags Inc., 840 N. 6th St., Philadelphia 23, Pa.

WANTED

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If you have an organic chemical background, a successful sales record, and believe you can analyze sales potentials, plan and promote the sale of new products, and develop salesmen, it may pay you to write us today. All replies will be held confidential. This is an exceptional opportunity.

Please send a complete resume, including education, experience, age and salary desired to

SW 2329 CHEMICAL WEEK
330 W. 42 St., New York 18, N. Y.

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SW 2402 Chemical Week
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Reclaimed & Surplus Chemicals
see opposite page

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Chemical concern in recently completed modern plant wants products for development, manufacture or merchandizing. Replies will be held strictly confidential.
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• Separations
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The new, 1951-52 BUYERS' GUIDE ISSUE of CHEMICAL WEEK is coming off the press this month . . .
. . . issued to all CHEMICAL WEEK subscribers

The latest 27th Annual Edition of the GUIDE contains:

- *Completely revised listings* verified by a 35-page questionnaire completed by all firms listed.
- *Equipment listings,* in addition to chemical materials, to make this directory the most comprehensive in the industry.
- *Distinction between producers vs. non-producers,* for all chemicals and raw materials.
- *Refurbished Equipment included* in a separate section of the directory.
- *Trade Name listings* are shown with the "owners" of brands only . . . no jobbers listings.
- *In addition:* an index to advertisers, telephone numbers, chemical prices, associations, societies, and technical data.

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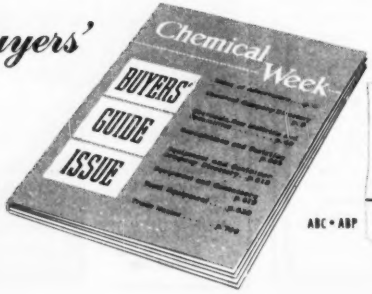
. . . Let THE BUYERS' GUIDE Work for You . . . to answer your many problems on sources of supply, availability, and the host of other data every chemical businessman needs to know.

Buyers'



Guide Issue of...

Chemical Week

ABC • ABP

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READER SERVICE

HOW TO USE COUPON

Circle page numbers of items about which you want more details. Then write your name and address on the coupon at the bottom of the page and mail it to us. Your request will be forwarded to companies concerned, the answer coming direct to you.

MAKES IT HANDY

Products and literature in this issue are listed on these pages. There are three indexes. (1) Editorial items on new products, new equipment, new literature; (2) products advertised. (3) The index of advertisers is on the following page.

THE NUMBERS

Advertisements:—There is a page number on the coupon for each advertisement. Before the number, may appear, L, R, T, B (left, right, top, bottom), locating the ad on the page; small letters following (a,b,c) indicate additional products in the advertisement.

Editorial Items:—Numerals are page numbers; the ABC's distinguish among items where more than one is on a page. There is a number on the coupon for each item referring to new products, equipment, and literature.

EDITORIAL ITEMS

For more data, circle number on coupon.

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For more data, circle number on coupon

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POSITION _____

COMPANY _____

ADDRESS _____

CITY & STATE _____

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Expires February 10, 1952

BOOKLETS . . . . .

Chemicals

Sorbitol

22-p. booklet reviewing the history, occurrence, chemical structure and general properties of sorbitol, a polyol derived from natural sugars, along with charts indicating its solubility, viscosity, specific gravity, boiling point, etc.; sorbitol is used in the moisture conditioning of cosmetics, tobacco and glue compositions as well as in the protective coatings, food, and pharmaceuticals fields. Atlas Powder Co.

Warfarin Rodenticides

16-p. booklet devoted to firm's anti-coagulant rodenticide, a warfarin concentrate for use in the preparation of ready-to-use baits and rodenticides; information is given on its discovery, testing, chemistry, and killing action in addition to instructions for baiting. Prentiss Drug & Chemical Co.

Monoglycerides

Reprint of article discussing monoglycerides of the fatty acids such as stearic, oleic, lauric, ricinoleic, etc.; methods of manufacture and applications are described, and a specifications chart is included to illustrate varying compositions and physical properties. Glyco Products Co., Inc.

Pesticides

First bulletin of a series on pesticide processing, intended to serve as a reference guide to the use of "Attaclay," the firm's carrier and diluent product. Physical and chemical properties and formulation characteristics are noted. Attapulgus Clay Co.

Pharmaceutical Chemicals

Catalog giving brief descriptions of the firm's products including several compounds which have recently aroused interest because of their potential therapeutic value. B. Lemke & Co., Inc.

Specialty Chemicals

Products price list covering firm's line of napthenate and non-napthenate driers, fungicides, paste mixing and milling aids, and other specialties for the paint and allied industries. Nuodex Products Co.

Equipment

Boiler Service Valves

22-p. bulletin giving specifications, materials of construction and dimensions of each type of valve for boiler service use—such as surface blow, bottom blow-off, water column blow-off and connections; operation of the valves is explained while sectional and exploded views illustrate design details. Everlasting Valve Co.

Dust Recovery

28-p. bulletin begins by explaining the nature of dust, techniques involved in its analysis, engineering details, and factors which influence the choice of equipment for tackling industrial dust recovery problems. It then goes on to describe with the help of illustrations and diagrams the construction, design and use of its dust recovery equipment — cyclones, electric precipitator, various collectors, combination systems and hopper valves. Buell Engineering Co., Inc.

Plate Fabrication

8-p. bulletin outlining firm's facilities for shearing, forming, fitting, and welding plus other engineering and fabricating services. Photographed are views of fabricating operations, machinery and completed products, along with brief descriptions. The Colonial Iron Works.

Elevating Conveyor

4-p. folder dealing with standard elevating conveyor designed to eliminate spilling or breakage, finding application in the drug, chemical, foodstuffs, pharmaceutical and plastics fields. Counsel Machine Co.

Synclinal Filter

8-p. folder supplying construction and application information in addition to engineering data on synclinal type filters for sump or line installation on all hydraulic and low pressure liquid recirculating systems. Marvel Engineering Co.

Air Conditioning Equipment

16-p. catalog covering features, operating principles, typical applications, and specifications for the firm's line of equipment for air conditioning, air handling and electronic air cleaning. Westinghouse Electric Corp.

Package Pumps

6-p. folder giving engineering and performance data plus dimensions for four different types of package pumps engineered for various fractional horsepower applications, including air conditioning, in capacities to 80 gpm at heads to 100 ft. Allis-Chalmers Mfg. Co.

Materials Handling Equipment

8-p. catalog featuring visual cross reference charts in presenting information on weights, capacities and other specifications for firm's line of material handling equipment. Also included is cross reference page showing attachments and devices as well as truck models to which they have been adapted. Clark Equipment Co.

General

Testing Services

8-p. bulletin discussing the firm's ultrasonic testing services which involve the use of the Reflectoscope, an instrument capable of locating discontinuities in metals and plastics; and the Reflectogage, which measures thickness of metals and other materials up to 4 inches, from one side only. Sperry Products, Inc.

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Complete Restriction of Information

For a two year period a manufacturer had worked on the problem of developing an oxidation catalyst for their own use. Their basic research was presented to a Davison Field Service Engineer as a laboratory prescription. This material was completely and confidentially coordinated with Davison's Technical Service and Research Departments. Pilot plant samples were manufactured enabling further research to be accomplished on the manufacture of the catalyst. Top men in the catalyst field worked on the development of this oxidation catalyst and after six months it was manufactured for large scale commercial use.

Because of Davison's modern facilities and extensive experience, the oxidation catalyst was produced at greatly reduced cost yet provided top yields. At no time was restricted information in danger of being divulged.

This is an example of how Davison's specialty catalyst development and production works. If you have a catalyst problem, contact the Davison Field Service Engineer. You can rely on Davison to work with you, confidentially.

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PRODUCERS OF: CATALYSTS, INORGANIC ACIDS, SUPERPHOSPHATES, PHOSPHATE ROCK, SILICA GELS, SILICOFLUORIDES AND FERTILIZERS

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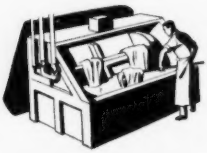
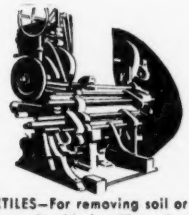
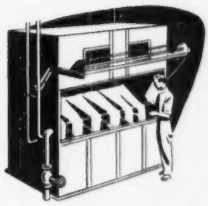


LEATHER & FURS—Vegetable tanning of sole and upper leathers; also bleaching of furs

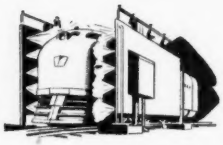


TEXTILES—For removing soil or smears after black aniline printing; in development of color when printing; for removing rust stains



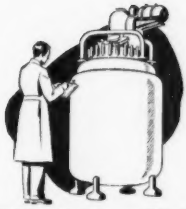
DYES—In manufacture of dyes

for these or other uses...



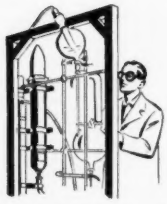
CLEANERS—For cleaning rust from railroad cars and buses; also as an auto radiator cleaner

PENTAERYTHRITOL — In manufacture of pentaerythritol, used in making surface coating resins and explosives



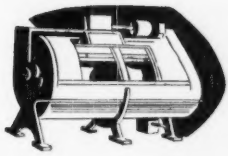
CHEMICALS—For manufacturing oxalates and other chemicals

Call on GENERAL CHEMICAL



DRUGS—For manufacturing pharmaceuticals, antibiotics

PLASTICS—As a polymerization catalyst or decoloring agent



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